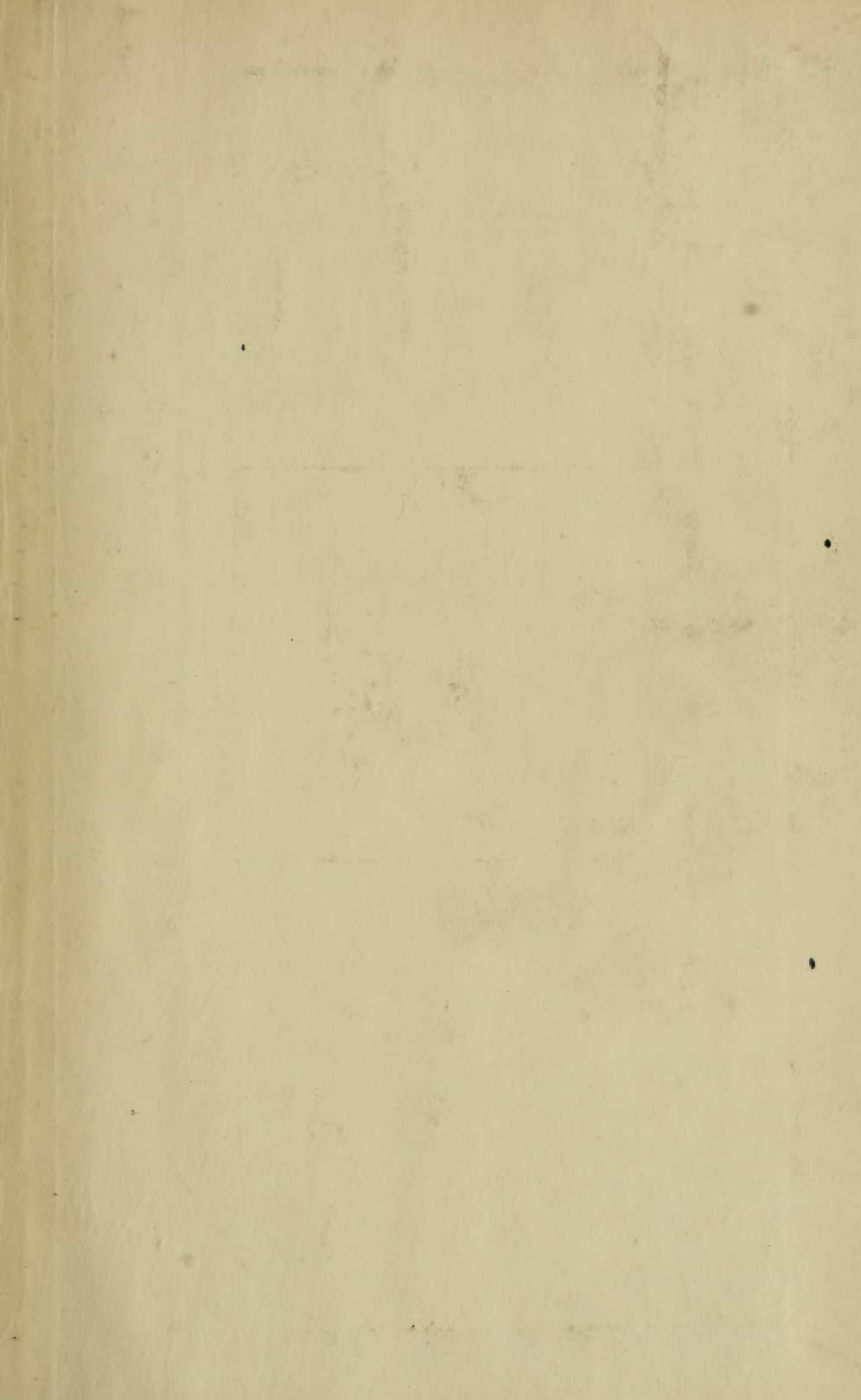
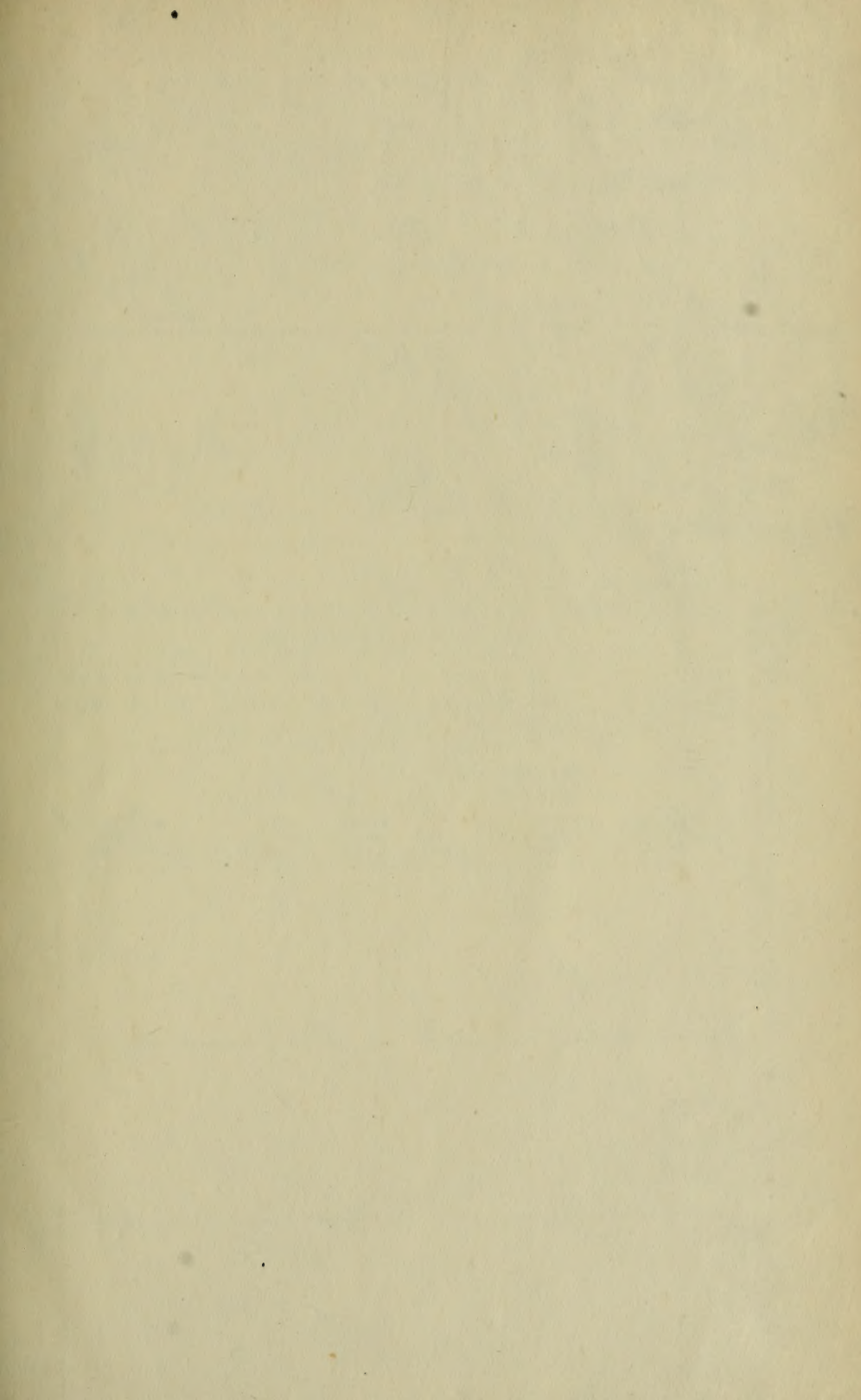














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NOVEMBER 18, 1937.

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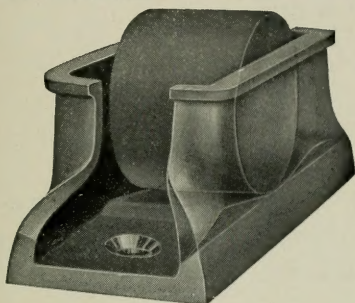
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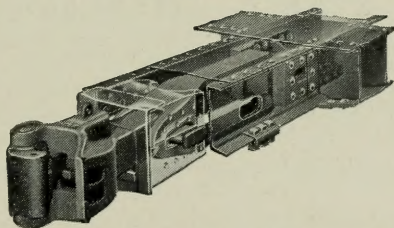
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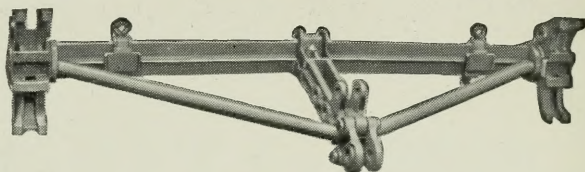


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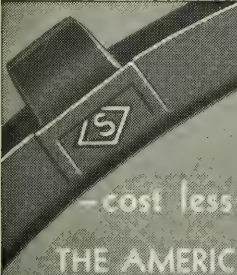
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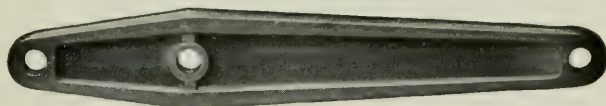
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Organized October 18, 1901

Vol. XXXVII.  
No. 1

**Pittsburgh, Pa., Nov. 18, 1937**

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 FRANK A. JARRES, Assistant Storekeeper, B. & O. R. R. Co., Pittsburgh, Pa.  
 C. S. LEET, Assistant General Manager, B. & L. E. R. R. Co., Pittsburgh, Pa.  
 C. R. MEGEE, Dist. Mgr. Car Service Div., Association of American Railroads, Pgh., Pa.  
 R. C. McINTYRE, Supt. Motive Power, Union Railroad Company, East Pittsburgh, Pa.  
 H. C. PRINGLE, Vice Pres. & Supt., Monongahela Connecting R. R. Co., Pittsburgh, Pa.  
 S. B. RILEY, General Superintendent, P. & W. Va. Ry. Co., Pittsburgh, Pa.  
 JOHN B. WRIGHT, Asst. Vice President, Westinghouse Air Brake Co., Wilmerding, Pa.  
 F. H. EATON, Sales Engineer, American Car & Foundry Company, Pittsburgh, Pa.  
 C. W. GOTTSCHALK, Asst. Traffic Manager, Jones & Laughlin Steel Corp., Pgh., Pa.  
 THOMAS R. FITZPATRICK, Freight Traffic Mgr., P. & L. E. R. R. Co., Pittsburgh, Pa.  
 P. W. HEPBURN, Sales Engineer, Gulf Oil Corporation, Pittsburgh, Pa.  
 C. W. TRUST, Asst. Traffic Mgr., U. S. Steel Corporation Subsidiaries, Pittsburgh, Pa.

## PAST PRESIDENTS:

|                        |                                  |
|------------------------|----------------------------------|
| *J. H. McCONNELL.....  | October, 1901, to October, 1903  |
| *L. H. TURNER.....     | November, 1903, to October, 1905 |
| *F. H. STARK.....      | November, 1905, to October, 1907 |
| *H. W. WATTS.....      | November, 1907, to April, 1908   |
| *D. J. REDDING.....    | November, 1908, to October, 1910 |
| *F. R. McFEATHERS..... | November, 1910, to October, 1912 |
| *A. G. MITCHELL.....   | November, 1912, to October, 1914 |
| *F. M. McNULTY.....    | November, 1914, to October, 1916 |
| *J. G. CODE.....       | November, 1916, to October, 1917 |
| *D. M. HOWE.....       | November, 1917, to October, 1918 |
| *J. A. SPIELMAN.....   | November, 1918, to October, 1919 |
| H. H. MAXFIELD.....    | November, 1919, to October, 1920 |
| FRANK J. LANAHAN.....  | November, 1920, to October, 1921 |
| *SAMUEL LYNN.....      | November, 1921, to October, 1922 |
| *D. F. CRAWFORD.....   | November, 1922, to October, 1923 |
| *GEO. D. OGDEN.....    | November, 1923, to October, 1924 |
| A. STUCKI.....         | November, 1924, to October, 1925 |
| F. G. MINNICK.....     | November, 1925, to October, 1926 |
| G. W. WILDIN.....      | November, 1926, to October, 1927 |
| E. J. DEVANS.....      | November, 1927, to October, 1928 |
| W. S. McABEE.....      | November, 1928, to October, 1929 |
| E. W. SMITH.....       | November, 1929, to October, 1930 |
| LOUIS E. ENDSLEY.....  | November, 1930, to October, 1931 |
| *JOHN E. HUGHES.....   | November, 1931, to October, 1932 |
| F. I. SNYDER.....      | November, 1932, to October, 1933 |
| C. O. DAMBACH.....     | November, 1933, to October, 1934 |
| R. H. FLINN.....       | November, 1934, to October, 1935 |
| R. P. FORSBERG.....    | November, 1935, to October, 1936 |
| E. A. RAUSCHART.....   | November, 1936, to October, 1937 |

\*—Deceased.

Meetings held fourth Thursday of each month except June, July and August.

## PROCEEDINGS OF MEETING

NOVEMBER 18, 1937

The meeting was called to order at the Fort Pitt Hotel at eight o'clock P. M., with President G. M. Sixsmith in the chair.

Registered attendance, 145, as follows:

### MEMBERS:

|                         |                   |
|-------------------------|-------------------|
| Adams, Frank W.         | Gleeson, H. L.    |
| Ambrose, W. F.          | Goldstrom, G. E.  |
| Bagaley, W. W.          | Gorman, A. T.     |
| Balph, M. Z.            | Grove, C. G.      |
| Balzer, C. E.           | Haller, Nelson M. |
| Beltz, J. D.            | Hausemann, R. E.  |
| Bender, H. P.           | Hayward, Carlton  |
| Berg, Max               | Hengst, Guy E.    |
| Beswick, R. M.          | Henry, C. J.      |
| Britt, T. E.            | Hepburn, P. W.    |
| Brown, E. F.            | Hess, Charles A.  |
| Bryant, L. J.           | Hilgert, T. J.    |
| Buchanan, C. C.         | Hilstrom, A. V.   |
| Bucher, Fred J.         | Holmes, E. H.     |
| Burel, W. C.            | Hopper, George    |
| Carr, T. W.             | Hykes, W. H.      |
| Carroll, D. C.          | Jakovac, Victor   |
| Cavanaugh, T. J.        | Jarres, F. A.     |
| Christy, F. X.          | Johnson, J. W.    |
| Cipro, Thomas           | Kearfott, W. E.   |
| Clausen, Harold C.      | Kentlein, John    |
| Coombe, A. B.           | Kondej, H.        |
| Courtney, H.            | Lanning, E. H.    |
| Cree, W. M.             | Long, R. M.       |
| Cudworth, H. D.         | Longstreth, W. L. |
| Dambach, C. O.          | Lundeen, C. J.    |
| Dean, E. E.             | Lytle, L. J.      |
| Dixon, C. P.            | Maliphant, C. W.  |
| Dunham, C. W.           | Malone, Frank B.  |
| Emery, E.               | Masterman, T. W.  |
| Endsley, Prof. Louis E. | Matchett, H. K.   |
| Fair, J. M.             | Menk, C. W.       |
| Freshwater, F. H.       | Millar, C. W.     |
| Hemma, Charles H.       | Misner, G. W.     |
| Galbraith, James R.     | Mitchell, W. S.   |
| Gardner, George R.      | Morgan, Homer C.  |
| George, W. J.           | McCormick, E. S.  |
| Gilg, Henry F.          | McGaughey, J. V.  |
| Gilbert, William J.     | McKinley, John T. |
| Glaser, J. P.           | Neff, Charles     |

Noonan, Daniel  
 Norris, J. L.  
 Overholt, B. C.  
 Pitcher, C. C.  
 Posteraro, S. F.  
 Purchard, Paul  
 Rau, W. R., Jr.  
 Riddle, F. L.  
 Rushneck, G. L.  
 Rutter, H. E.  
 Sanders, C. R.  
 Schadt, A. D.  
 Schiller, John  
 Schmitt, Andrew  
 Sekera, Charles J.  
 Sheridan, T. F.  
 Shuster, W. W.  
 Sixsmith, G. M.  
 Smith, Robert B.  
 Steding, Henry L.  
 Steiner, P. E.

Stewart, J. C.  
 Suckfield, G. A.  
 Taylor, H. D.  
 Terkelsen, B.  
 Ternent, H. J.  
 Teskey, Dr. Walter J.  
 Thornton, A. W.  
 Tracey, J. B. A.  
 Unger, Dr. John S.  
 Van Horne, C. F.  
 Walter, E. R.  
 Walther, G. C.  
 Warfel, J. A.  
 Wattles, H. Starr  
 Welton, A. A.  
 Wilson, James R.  
 Woodward, R.  
 Woodings, W. H.  
 Yarnall, Jesse  
 Yohe, J. K., Jr.  
 Young, Paul S.

#### VISITORS:

Anderson, J. P.  
 Badgett, Stephen H.  
 Bowman, H. D.  
 Dankmyer, F. C.  
 Davis, William B.  
 Eisel, H. G.  
 Gardner, G. R., Jr.  
 Gang, C. G.  
 Hammer, Charles F.  
 Knox, John J.  
 Lewis, S. B.

Lumpp, R. J.  
 Marshall, L. L.  
 McGall, William  
 Reagan, P. H.  
 Reynolds, D. E.  
 Ryce, Edwin S.  
 Small, E. V.  
 Smith, Sion B.  
 Tyburski, L. T.  
 Utzler, Elmer S.  
 Walker, W. S.

Warren, H. E.

PRESIDENT SIXSMITH: Gentlemen, if I get off the track or become confused in any respect tonight, you will understand it is because the right arm of the President of this organization is absent for reasons over which he had no control and, therefore, it will be incumbent upon us to get along as best as we can without his guidance on this particular occasion.

I am sorry that we are without any entertainment tonight and I just want to assure the members that an endeavor is to be made to provide music or some other form of entertainment in connection with at least some of our



meetings during the present year, and I make this announcement only because I undersatnd some of our members at least would like to have a little entertainment mixed in with the regular order of business.

We are glad indeed to see so many of our members here tonight at this our first meeting since the new officers were installed. There is nothing that is more encouraging to the officers of an organization than to have a good attendance at meetings and interest displayed in connection with such meetings. Especially do I want to welcome any guests that may be here tonight. It is always a pleasure to greet guests at these meetings and extend to them the glad hand of welcome. I hope they enjoy themselves and consider the evening well-spent.

**ROLL CALL:** The usual announcement is made with respect to the attendance being registered by cards signed at the door, thus providing a complete record of those members present, and therefore the roll call is dispensed with. Likewise, we will dispense with the reading of the minutes of the last meeting, unless there is some objection, as they are now being printed and will be distributed to you in the very near future.

We have the following proposals for membership, the list of which I will read at this time.

- Bagaley, William W., Assistant Purchasing Agent, H. K. Porter Company, 7 Vilsack Street, Etna, Pa. Recommended by John Kentlein.
- Black, C. M., Assistant to Vice President, P. & W. Va. Ry. Co., Wabash Building, Pittsburgh, Pa. Recommended by S. B. Riley.
- Faustman, Paul L., Transportation Assistant, B. & O. R.R. Co., Smithfield and Water Streets, Pittsburgh, Pa. Recommended by J. D. Beltz.
- Hagan, Harry F., Train Dispatcher, Pennsylvania Railroad, 302 Delaware Avenue, Oakmont, Pa. Recommended by G. M. Sixsmith.
- Hausemann, R. E., Sales Manager, Pugh Brothers Jewelers, Gulf Building, Pittsburgh, Pa. Recommended by E. A. Rauschart.
- Hilgert, T. J., Maintainer T. & S., Pennsylvania Railroad, 515 Market Street, Freeport, Pa. Recommended by G. M. Sixsmith.
- Riddle, Frederick L., Engineer Maintenance of Way, P. & W. Va. Ry. Co., Wabash Building, Pittsburgh, Pa. Recommended by S. B. Riley.
- Staats, Kenneth A., Sales Engineer, Pyle-National Company, Clark Building, Pittsburgh, Pa. Recommended by Crawford McGinnis.
- Wattles, H. Starr, Assistant on Engineering Corps, Pennsylvania Railroad, 425 Duquesne Avenue, Trafford, Pa. Recommended by C. R. Sanders.

As you know, our By-Laws provide that these proposals shall be submitted to the Executive Committee, and upon approval by that Committee the gentlemen become members without further action of the Club. In accordance with these provisions, the proposals which I have just read will be re-

ferred to the Executive Committee and I am sure will receive favorable action.

You will remember that at the last meeting we presented the new Vice President and I think it is only fitting that we should likewise present the Chairmen of the various Committees recently appointed and announced by the Executive Committee. We have been very fortunate, I think, in the judgment of that Committee in the selections which they have made for these important offices, and I am going to take advantage of this occasion to formally present them to you by announcement.

The Chairman of the Executive Committee will, of course, continue to be Mr. Frank J. Lanahan, and we are all glad to have him continue in that important capacity. Then we have the important Subjects Committee, and it is with considerable pleasure and satisfaction that we are able to say that this Committee will be headed by Mr. H. H. Haupt, General Superintendent Motive Power, Pennsylvania Railroad. The "Glad Hand" Committee, namely the Reception and Attendance, will I am glad to say continue under the Chairmanship of Mr. J. W. Johnson, Manager of the Railway Express Company, with Mr. J. W. Hoover serving as Vice Chairman of that Committee. You all know both of these gentlemen and will agree with me that the job before them is in good hands. The work of the Entertainment Committee is another important feature of our activities and I know of no better gentleman to carry on this work successfully than Mr. J. Porter Gillespie as Chairman, with Vincent Kroen as Vice Chairman. The Finance Committee is headed by Mr. M. A. Smith, General Manager, P. & L. E. Railroad and I know you will all agree that a better selection for the Chairmanship could not have been made. The Advertising Committee is another body that gets results according to the efforts put forth, and I feel the necessary punch will be put into this work which is so closely tied up with our finances by the new Chairman, Mr. J. H. James, Purchasing Agent, P. & L. E. Railroad. The Membership Committee is headed by Mr. W. E. Moir, Chief Car Inspector, Pennsylvania Railroad, and as Vice Chairman we have Mr. Lloyd Sutherland, General Storekeeper, P. & L. E. Railroad. You all know of the past activities of this gentleman in behalf of the welfare of this

Club and no doubt will agree with me that a good membership record during the coming year is already assured.

The same care and consideration was given by the Executive Committee as to the selection of members to serve on these committees under the Chairmen I have just announced. I will not take the time now to mention who these gentlemen are and I feel this is unnecessary, as their names will appear in our future publications. To the Committee Chairmen I just want to say that we hope to have a meeting with them prior to the next regular meeting of the Club for the purpose of organization and having a better understanding as to the contemplated program for the present year.

At the last meeting, the President made the remark that it would be a fine thing and very helpful if our members would make suggestions from time to time for consideration in connection with formulating our meeting programs or in connection with the general presentation and arrangement for our meetings. I am glad to announce that this suggestion is already bearing fruit. We have a splendid suggestion for a prospective speaker which has been referred to the Subjects Committee, and it is just possible that we will have the speaker suggested on the occasion of one of our future meetings. This only emphasizes what was said at the last meeting with respect to suggestions and that is that you gentlemen can be of considerable help in promoting progress in this Club by taking an active interest in its affairs and being helpful with suggestions that may occur to you as we carry on throughout the year.

I also want to mention another matter which has to do with the affairs of our personnel and that is the importance of the Secretary being kept informed of the death of members in order that appropriate action and announcement relative thereto may be made promptly in a subsequent issue of our proceedings. While in the office of the Secretary today I found that he had just been informed of the death of a member that occurred back in 1935 and obviously it would be very embarrassing to take the usual procedure in matters of this kind at this late date. I wish, therefore, that our members would bring to the attention of the Secretary promptly information that may come to them of the death of a fellow member for appropriate action on the part of the Club.

Now gentlemen, we have come to the part of our program that I know you are all waiting for. It is a pleasure, though somewhat of a problem, for me to introduce the gentleman who will address you. If you have observed closely the announcement cards of this meeting, you will appreciate the difficulty I have in determining just what he is and how to pronounce it. After some investigation and a lot of practice, I have decided that you do not pronounce physicist, you whistle it, and if you are good whistlers you will be able to give better expression to what the gentleman is than I can.

Dr. Abbott is a graduate of the University of Michigan. He later was associated with that University for a period of ten years, which time he devoted to research work for outside industries. About three years ago, he resigned from the University of Michigan and formed his own organization for handling work of this kind, with headquarters at Ann Arbor, Michigan. I believe you will agree with me that the Subjects Committee has been very fortunate and is to be congratulated on having been able to induce a man of Dr. Abbott's knowledge and experience to come to Pittsburgh for this meeting tonight and discuss for our benefit a subject that I at least know very little about, but am looking forward with keen anticipation to hearing what Dr. Abbott has to say.

And in this connection I would like to suggest, particularly since he has already informed me that he will be very glad to attempt to answer any questions that may be put to him following his presentation of the subject, that during the course of his talk some of you physicists remember points he may have made on which you would like further enlightenment, and be prepared, if you wish, to ask him any questions that may have occurred to you during his talk.

Now, gentlemen, it is with a great deal of pleasure that I present to you Mr. Ernest J. Abbott, Ph.D., E.E., President, Physicists Research Company, Ann Arbor, Michigan, who will discuss for your benefit the subject, "Quieting Machinery with the Aid of Sound Measurements".



# QUIETTING MACHINERY WITH THE AID OF SOUND MEASUREMENT

By ERNEST J. ABBOTT, Physicists Research Co., Ann Arbor, Michigan

There is an innate contrariness to noise which appears to contradict all good engineering background and methods of attack. The most straightforward logic often fails miserably in practice and things just do not work the way anyone knows they should. Technical and production men who have been charged with producing quiet machinery are practically unanimous in their opinion that things just do not make sense in this line of work.

Of course, all engineers believe in logical explanations, and these contradictory results are due to a lack of knowledge and understanding of the controlling factors. It is often difficult to realize how meager is our knowledge of sound, because "anyone can hear with his own ears."

## **"Try and Listen."**

In fact, the most common expression encountered in connection with quieting is "What is the need of meters for measuring sound? We know the sound is there and if a quieting job does not reduce the noise enough that we can hear it by ear, it is of no practical importance."

The logic of this statement seems unassailable, and at the outset of a quieting job, the method usually works reasonably well. Sooner or later the point is reached where this "try and listen" method fails to produce results. Further, attempts along this line are no longer economical but are very inefficient and costly. Untold years of time and thousands of dollars are spent in trying to obtain quieting by "try and listen" on jobs where this means is not yielding satisfactory results.

When one method of attack fails, the practical approach is to determine where it falls down and devise new means which are effective in solving the problems at hand. With the increasing growth of noise consciousness, the demand for quieter machinery of all kinds has become more insistent, and new tools and new backgrounds of experience have been fostered. It is the purpose of this article to outline some of these fundamentals. To do so in words is most difficult, although if one can actually hear the sounds, the points are

readily apparent. When this material was presented before the Railway Club, actual sounds were produced, and "one (ear) picture is worth a thousand words."

### **Ears and Meters.**

Measurement is almost invariably the key to better understanding and noise work is no exception. The human ear fails as a measuring instrument on most practical quieting work, and the solution is obtained through the use of instrumental measurements. However, the use of sound meters does not divorce one from considerations of the human ear. Instead, the whole technique of the solution of practical noise problems with the aid of instruments is based on the characteristics of the ear, and the interpretation of the data in terms of these rather complicated characteristics of the ear.

The characteristics of the ear which are of primary importance in quieting work are:

1. The ability to remember the loudness of a sound.
2. The change of level required to produce an appreciable quieting.
3. Relation of meter readings of sound level to loudness as heard by ear.
4. Addition of components of a sound.
5. Analyzing ability of ear and judgments of "quality".

### **"Holding a Limit" on Loudness.**

The ability of the ear to remember the loudness of a sound is an extremely variable factor. If a note is sounded before a group of people and the level varied, there will usually be a spread of at least 20 decibels in the judgments of the individual observers of the return of the sound to its original level. On the other hand, I have seen several people ride in first one car and then another, and unanimously select the car which was  $1\frac{1}{2}$  db. quieter. The comparison of a sound with a familiar background noise is an effective way to improve the accuracy of loudness judgments, and often it is entirely unconscious. While ear listening is a valuable aid to any quieting problem, experience proves that it is not safe to trust one's ears and memory except for comparisons made at brief intervals, and then the accuracy is not good unless "back and forth" observations can be made. Perhaps 2 to 5 db. represents a reasonable uncertainty of ear observations,

although values outside this range are common. "Back and forth" checks can usually be made to a fraction of a decibel.

### **Noticeable Loudness Change.**

A question asked very frequently is "What constitutes a practical reduction in sound level?" A sensible and important question, but one which is hard to answer definitely. A change of less than a decibel is ordinarily indistinguishable and several decibels are required to cause much difference, particularly if an interval elapses between comparisons. Reductions of 3 to 5 db. are usually considered worth spending money upon and reductions of 10 to 20 db. are very striking indeed. However, such things are hard to put into words; the differences must be heard to be appreciated.

### **Meter Reading Vs. Ear Judgment.**

Most of the sound meters available today measure weighted sound pressure level which is commonly called "Total noise" or "sound level". This is probably the most valuable single measurement which can be made on a noise but in few practical jobs is it sufficient to yield the data needed to solve the problem. It is easily demonstrated that the human ear does not add up the various component pressures of a sound in the same manner as the meter. If a given amount of sound energy exists in the form of several notes well separated in frequency, it sounds much louder than the same amount of energy concentrated in a single note. Most practical noises contain a number of musical notes, and considerable "unpitched sound" which does not consist of discrete frequencies, although it often has a fairly distinct apparent "pitch". Tests indicate that the loudness of a sound is seldom changed without a corresponding change in "total noise" level, but the two are not identical, and the data must be interpreted with caution, and with particular reference to the sound at hand. (Loudness is used here to represent the ear sensation, while "total noise" is a meter reading.)

### **Four Sounds as Loud as Five for Practical Purposes.**

Probably the ear characteristic which has the greatest influence on quieting work is the "addition of sounds". The range over which the ear works ( $10^{12}$  to 1 in power) is so great that rather large changes of power are required to produce much change in loudness. As mentioned above, a

difference of acoustic power of 25% (1 db.) is hardly detectible, and an increase of 100% (3 db.) produces only a moderate increase in loudness. Consequently, if one has four or five sounds of about equal loudness, the complete removal of one of them reduces the level by less than one db., and for all practical purposes the sound is as loud as before. Hence, most jobs require the quieting of several sources, or paths, of the sound simultaneously, or no practical good is obtained.

One may try, one after another, all of the quieting moves necessary to solve a problem, but unless all essential changes are made simultaneously, the quieting may be comparatively negligible. Hence, on the basis of ear tests, all moves will be rejected. One of the fundamental reasons for using instruments is to measure these small changes which are inconsequential in themselves, but which can be taken together with other such changes to produce a very attractive result.

### **Quality—Another Important Characteristic of Sounds.**

The loudness of a sound is an important characteristic, but it is by no means the only one of practical importance. The term "quality" is ordinarily used to denote the characteristics of a sound which determine its individual character. From a physical point of view, the quality of a sound is determined by the relative amounts of acoustic energy in the various parts of the audible range, and how these components vary with time. It is almost impossible to realize the diversity in the qualities of familiar sounds until one attempts to measure them, but one does not go far in quieting work until the importance of quality is proved. Indeed, in most problems, quality is more important than loudness.

A "total noise" meter obviously gives no clue to the quality of a sound, and hence it is not a sufficient tool for practical work, although it is a valuable one. It is easily demonstrated that very striking and important changes in a sound can be made by changes in components which have a negligible effect on the total noise. Also there may be shifts in the energies of the various components which produce important changes to the ear, but which leave the total noise unaffected. Hence, practical noise problems almost invariably deal with measurements of sound quality.



## **Frequency Analysis for Measuring Sound Quality.**

The quality of sound can be measured in terms of its physical composition with about as much accuracy and completeness as one desires, and such measurements lead to useful and valuable information. The general scheme is called "frequency-analysis" but the modifications of the technique are almost infinite. If time and expense were no object, and the sounds did not change, it would probably be possible to make complete measurements of the quality of a sound. Such an analysis would require thousands and thousands of readings, even on simple problems, and the work of examining and correlating the data would be overwhelming. Such an attack is far, far, beyond the realms of practical possibility.

Naturally, one thinks of automatic recording equipment for facilitating such work. These have been built and have their uses, but they have severe practical disadvantages besides cost. Space does not permit a discussion of the advantages and disadvantages of the various possible sound analyzing equipment, but it can be said with little fear of contradiction that no one piece of apparatus is suitable for solving most machinery noise problems.

## **Sound Measurements a Practical Tool.**

By now the reader is probably convinced that the problems are too complicated for economical solution by meter, but such is not the case. At any rate, the complications are not eliminated by using ear listening, but rather are increased. Instrumental means do provide exceedingly powerful and efficient means for solving difficult and apparently incomprehensible problems. This is not accomplished by taking a lot of measurements and then trying to interpret them, but by most carefully planning the experiments to yield the maximum information with a minimum of measurements. At best, quieting experiments are slow and costly, and it is the easiest thing in the world to spend endless time and money taking readings which are perfectly correct but which do not lead anywhere. In a decade of work on noise problems with the aid of instruments, I can say that on every single job, different technique and methods were required. Almost invariably, instruments must be modified for the particular job at hand, and means devised to obtain measurements on the thing one wishes to know with a practical number of read-

ings. (To the uninitiated, this minimum number of readings appears colossal). It has also been my experience that on every single job, entirely unexpected, and often very useful results were obtained when the proper attack was applied.

### **Modification of Instruments and Technique to Suit Job Is Essential.**

If the experience of scores of concerns is a guide, it has been amply demonstrated that noise problems are seldom solved by assembling a lot of equipment and taking a quantity of readings with the idea that the solution must be readily apparent. Successful jobs, and they are becoming more

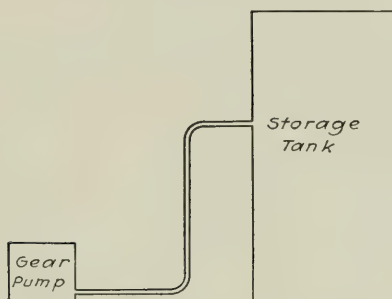


Fig. 1—Noise from Tank involved two types of sound transmission.

numerous, have been achieved by a high ratio of thought to experiment, and a continuous modification of instrumentation and technique to suit the needs of the individual job. Modern vacuum tube and electrical equipment furnish tools of a variety and power for diagnosis not even touched in practice, when in the hands of a man who understands them.

In my talk before the Railway Club, a dozen or more examples of practical quieting were outlined, and in each case a different factor was the controlling one and different practical remedies were applied. Space does not permit a discussion of all these problems here, but four have been selected to illustrate the results obtained.\*

### **Simultaneous Treatment of All Prominent Noise Sources Is Important.**

Fig. 1 indicates a noise problem. Oil was fed to a storage tank by a gear pump which produced an annoying note

\*A more complete description of this material appears in a paper by the author in the November, 1936 issue of *Mechanical Engineering*.

of about 700 cycles. The noise appeared to come from the tank, and the owner thought that it must be telegraphed through the pipe. Accordingly, he placed a flexible section in the pipe, but the noise seemed just as loud as before and so the flexible section was removed. The next idea was that the noise was caused by pressure surges, and a side tube was installed to absorb them. The outfit was still as noisy as ever, and the owner looked for help on this problem which did not seem to make sense.

The problem was easily and effectively solved by installing a flexible section and a surge absorber simultaneously, and thus reducing both sources of noise at the same time. This demonstrated the oft-encountered fact that if there are two or three noises of about equal prominence, little benefit is gained from reducing only one of them.

### **Fundamentals:**

1. For practical purposes, one source of sound was nearly as loud as two.
2. The original source of sound was not the surface from which it was radiated, and isolation was very effective.

This was a simple job, and easily solved without much measurement. The one described next was more complicated.

### **Location of Obscure Causes of Noise.**

In the previously described problem, the sources of the noise were fairly obvious; the problem was primarily a matter of determining their relative importance and how they could best be handled. It often happens that the actual cause of the noise is obscure, and experimentation can be almost endless. The following example indicates how acoustical measurements can be used to advantage in such cases.

A manufacturer encountered difficulty with noise in his product. As is so often the case, it seemed almost impossible to locate the cause. Many of the machines were satisfactory but others were noisy. Most careful checks of limits and tolerances showed no differences between the noisy and the quiet units. Units made with especially close tolerances were often noisier than average. Assemblies made from the parts of previously rejected machines were often quiet. This just did not make sense.

After making various acoustical measurements and analyses, the run shown in the upper curve of Fig. 2, was made. The machine was operated by an ordinary induction motor, which operated at essentially constant speed. To determine the effects of moderate changes of speed, the frequency of the power source was varied. As shown in the upper curve,

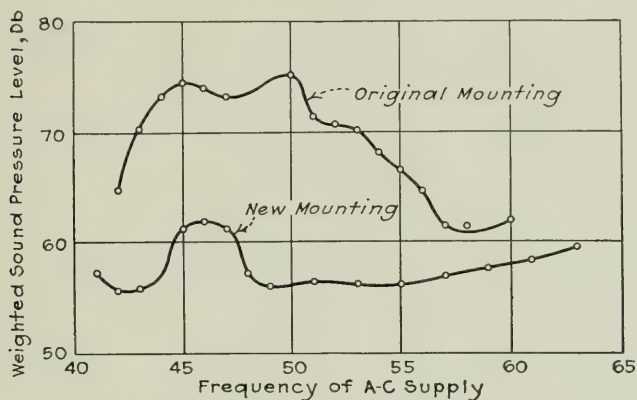


Fig. 2—Tests showing influence of small speed changes on noise.

(Quieting was obtained by minor change in a vibration isolator on the machine.)

a slight reduction in frequency (speed) increased the noise nearly 15 db. This increase was easily traced to resonance in a vibration isolator which formed part of the machine. Herein lay the explanation of the trouble. On some machines, differences in weight of castings and stiffness were sufficient to bring the operating condition up on the side of this curve; on others, the operating speed would come near the minimum. Different assemblies of the parts might shift the critical frequency for better or worse.

Practical quieting often is obtained by removing material, and lessening cost of production rather than adding additional material to a noisy machine and increasing cost. Acting on this theory, part of the resilient material in the isolator was removed, with the results shown in the lower curve of Fig. 2. Not only was the peak eliminated so that production variations produced no effect on the noise, but the level was also lowered. This quieting was accompanied by a small decrease in cost of production.



### **Fundamentals:**

1. This was primarily a question of diagnosis. Sound measurements are very effective in this role.
2. The corrective was quite obvious once the cause was determined, and involved no increase in production cost.
3. Most problems seem simple once they are understood, and accoustical measurements enable the explanations to be obtained quickly.

### **The Profilometer: An Instrument for Measuring the Roughness of a Surface — A By-Product of Noise Reduction.**

Some time ago in connection with noise problems on gears, the question arose as to the influence of the roughness of the surface of the teeth on the noise. In order to make these comparisons it was necessary to measure the

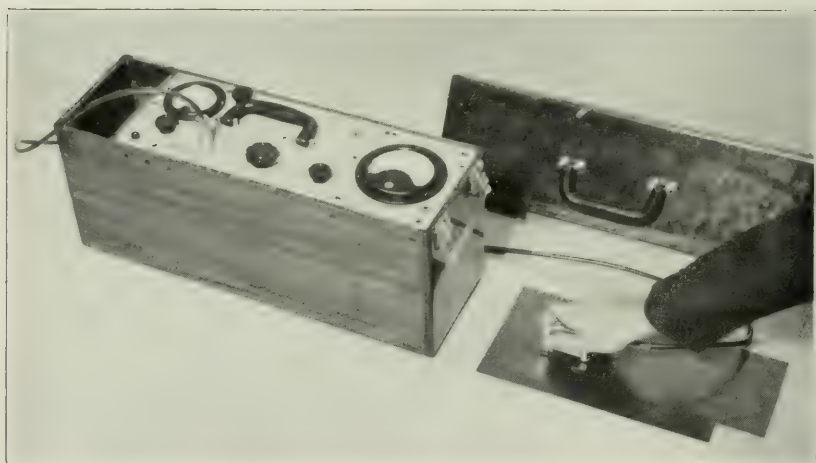


Fig. 3—Portable Profilometer for Measuring Surface Roughness.

roughness of the tooth surfaces, and since no instruments were available for this purpose, it was necessary to develop such an instrument. This led to additional work in the measurement of surfaces of bearings, cylinders, shafts, axles and other machine parts. This has become quite a field in itself, and one of the recent developments is the portable Profilometer, shown in Fig. 3.

The instrument consists of two parts: a small tracer unit shown in the hand, and an instrument box which carries the

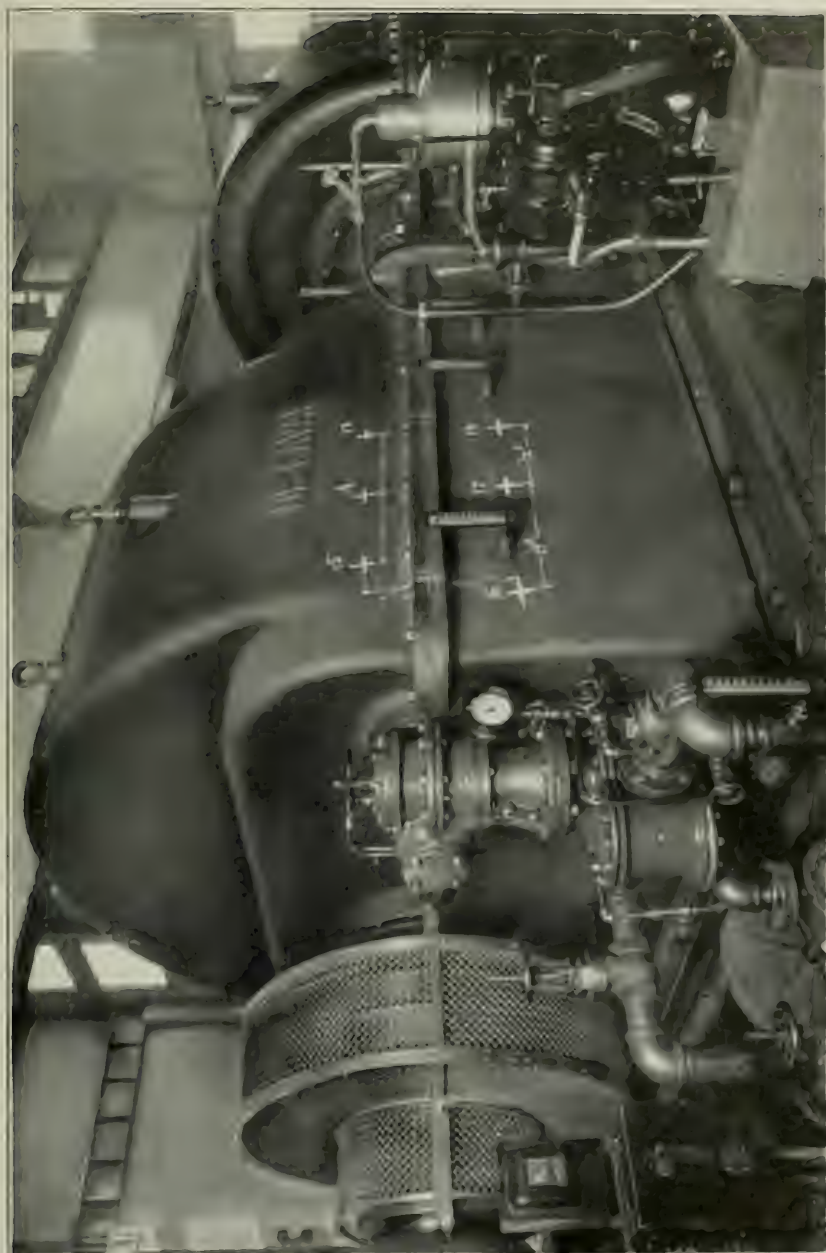


Fig. 4—Reduction Gear, Used on Turbo Generator.

indicator meter. The tracer is drawn across the surface whose roughness it is desired to measure, and the meter shows a continuous running average of the height of the surface irregularities. It is calibrated directly in millionths of an inch, and has different ranges to cover the various degrees of roughness found in practice. It serves as an accurate and rapid means for measuring roughness, and marked improvements in the production, and life of machine parts have been obtained with the aid of this instrument.

### **Diagnosing Fundamental Causes of Noise from Sound Measurements.**

It often happens that acoustical measurements yield unexpected but very definite information concerning the mechanism of a machine and indicate where improvements may be made to advantage. Fig. 4 shows a large reduction gear on which this was done.

The initial purpose of the work was to determine noise specifications for this type of unit so that a central-station company could include them in the order for their next turbo-generator unit. While such specifications are entirely feasible, it is desirable to determine them on the basis of existing equipment rather than to write them entirely on the basis of personal opinion. To this end, both sound-level measurements and frequency analyses were made on a group of existing units. Typical frequency analyses are shown in Fig. 5.

These measurements showed that the machines had very prominent musical components. These notes were all harmonics of two fundamental frequencies. Surprisingly enough, these fundamental frequencies did not correspond to frequencies of tooth contact as in the case of most gears, but instead were related to frequencies of rotation. Each of these gear units consisted of a large bull gear meshing with two separately driven pinions. The two series of notes were harmonics of speeds of these pinions. No notes could be detected which corresponded to bull-gear rotation. Each different gear set showed an entirely different acoustical spectrum (although all notes were harmonics of pinion rotation). When one of the sets was reconditioned by taking a small cut from the working side of the teeth, the acoustical spectrum was entirely different from what it was before. From these observations the following conclusions follow:

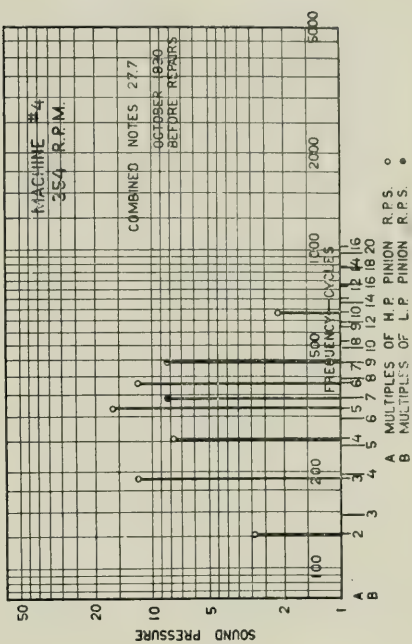
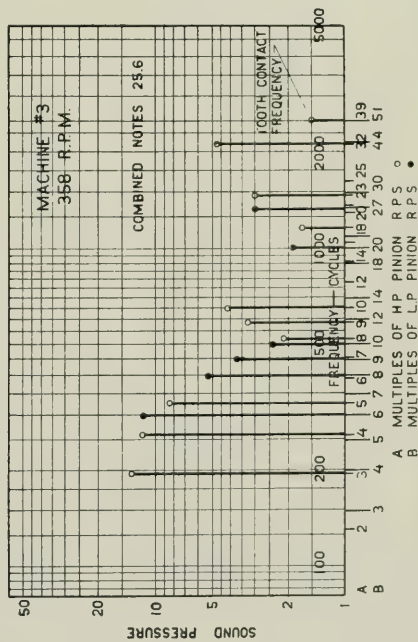
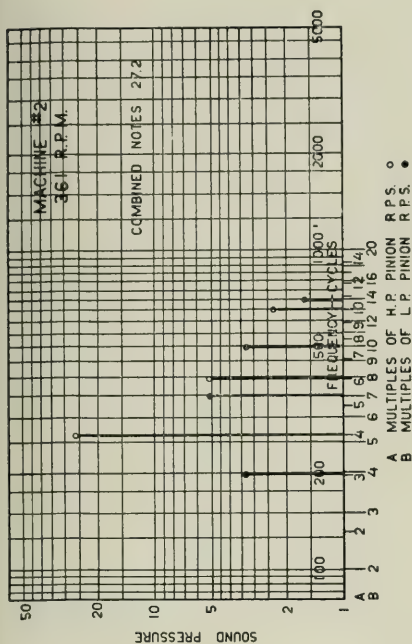
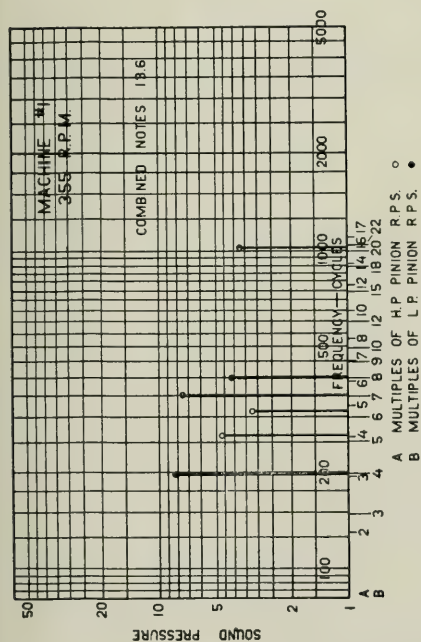


Fig. 5—Typical Frequency Analyses of Gear Units. (Note differences in number, pitch, and relative importance of components.)



(a) Errors in tooth contour were not responsible for the noise. (Tooth contact frequency was missing or negligible in this case).

(b) Misalignment or deflection under load was not responsible for noise. (These would produce tooth-contact frequency).

(c) Imperfect balance was not responsible for noise. (Fundamental rotational frequencies were missing.)

(d) The pinions were responsible for the noise, not the gear.

(e) The particular pinion responsible for each note was obvious.

(f) Notes were not caused by resonances of the shafts, webs, castings, etc. (Units with closely similar parts gave very different spectra. Even the same unit gave a different spectrum when the tooth surfaces were refinished).

(g) This information indicated quite clearly that the errors causing the noise were produced by the machine on which the gears were cut, particularly the machine used in cutting the pinions. Further, the errors were not in the form of the cutter, but in the mechanism by which the blank was indexed from one tooth to the next, and by which the tooth spiral was generated.

In addition to the musical components just described, measurements showed that "unpitched sound" was prominent on several of the gear units. The reconditioned unit showed materially less unpitched noise than the others, indicating that roughness of the teeth was an important cause. Unevenly spaced irregularities on the bull-gear and other surfaces would also produce this type of noise.

### **Fundamentals:**

1. Acoustical measurements yielded unexpected and valuable information concerning machinery mechanism.
2. The foregoing conclusions listed provide a definite diagnosis of the fundamental causes of the noise.
3. Noise specifications for such machinery appear entirely feasible.

### **Summary.**

Practical noise problems which defy solution by "try and listen" methods can be solved definitely and logically with the aid of suitable sound measurements. This has been well

demonstrated in practice. The peculiarities of the human sense of hearing and the characteristics of noises introduce complications which apparently contradict all good engineering background, and render ineffective techniques which ordinarily are the best. This is the fundamental reason why quieting has progressed so slowly. The crux of successful application of sound measurements lies in planning the experiments and modifying the technique so that interpretable and useful data can be obtained. This is best accomplished by someone with experience in the devising means of measuring and interpreting acoustical quantities as well as general engineering background. If these two things are brought together, success follows almost as a matter of course.

PRESIDENT: Thank you very much, Dr. Abbott. Now we all know why you are called a physicist and in view of the various kinds of noise necessary in connection with your demonstration why you have to make a funny noise to pronounce it. I do not know whether any of you have any questions to ask Dr. Abbott, but if you have some, in accordance with our earlier announcement, I am sure he will be glad to answer them. Who would like to ask a question?

MR. J. R. GALBRAITH, Fire Marshal, P. & L. E. R. R. Co.: Some few years ago we used 68-70 gravity gasoline in our automobile motors which readily developed a knock in the motor. Now an anti-knock gasoline is being used. This gasoline has lead in it. As lead is a deadener of sound, the question in my mind is whether the knock has been eliminated or is the knock still in the motor but cannot be heard?

DR. ABBOTT: The speaker asks what happens to the knock in the automobile. I know very little about that because I am limited in the scope of my work by the people who provide the appropriations. No one has ever made an appropriation for us to work on knocks. I understand that the knock is caused by irregularities in the burning of the gasoline, and by modifying the chemical content of the gasoline the burning can be controlled so that it takes place more evenly and does not knock. The knock is eliminated at the source, and not simply deadened later is the answer to the question.

Tetra-ethyl lead is only one of a number of materials which can be mixed with gasoline to control burning. That

question has received considerable study which has been reported at meetings of the Society of Automotive Engineers.

Very high anti-knock qualities are in use in military gasoline, which is used in aeroplanes for both army and navy. It is a matter of controlling the rate of combustion of the gasoline, and that, as I have said, may be done by a number of materials.

PRESIDENT: Are there any other questions? Professor Endsley, would you like to ask a question?

PROFESSOR LOUIS E. ENDSLEY: This talk tonight has been very interesting indeed. The difference in sound produced by different modes of transportation was taken as a thesis by some seniors at the University of Pittsburgh in 1936. They obtained a microphone and other instruments and constructed their own power control and did a very good job of it. They took this machine, which indicated amount of sound, in all modes of transportation including private automobiles (old and new), buses (old and new), street cars, aeroplanes, Pullman cars, and day coaches, and made some interesting discoveries.

The railway cars were air-conditioned cars, and you railroad men will be very much interested and pleased to know that the air-conditioned Pullman car showed the least amount of noise, and the air-conditioned day coach showed next. As you no doubt expect—the aeroplane showed the most noise.

I was also interested in reading in the proceedings of the American Society of Mechanical Engineers where someone had used a tuning fork to determine the amount of noise at any point. This was done by starting the tuning fork vibrating at a given distance from the ear and noting the time between the initial hitting of the tuning fork with a known force, and the time when the tuning fork could not be heard. I am wondering if there is any value obtained by this method.

I wish to say that I have enjoyed the very excellent talk which has been given to us tonight, and I am sure everyone here has enjoyed it.

DR. ABBOTT: I never have had opportunity to actually take comparative measurements under those conditions of test but I think what you refer to would be in accord with my ideas. The parlor car is probably quieter than the auto-

mobile or the airplane. But the airplane people have in the last two years reduced their level many decibels. If the railroad people are going to keep ahead they will have to get a move on.

This use of the tuning fork for determining the level of the sound is a very simple form. For a rough determination of the approximate level it is quite satisfactory. One can get measurements that compare quite favorably with meters. But it never could be used to determine whether or not you should make changes. It is not sufficiently accurate to use on a program of improvement, but it is quite satisfactory to determine general loudness, and very simple.

PRESIDENT: If you can be patient just a few moments longer, there are a couple of announcements that should be made at this time. One is to remind you that the December meeting will be held a week in advance of the regular meeting night. According to our By-Laws, the meeting should be held on the fourth Thursday of the month, but as this night in the month of December falls just before Christmas our December meeting will be held on the third Thursday, or December 16th. We expect to have a sound film and a talk by a representative of the Pullman-Standard Car Manufacturing Company. I understand this presentation has been made at a number of club meetings and is being presented tonight in New York before the New York Railway Club.

The other announcement I have to make should I suppose be rather in the nature of an apology. You will recall that at the annual meeting last month we had an unusually large attendance, approximately 600 being present, and we are very sorry that the luncheon arrangements were not adequate. This was because one end of the room had to be occupied by the stage for the entertainment and when it was noticed from the platform that sufficient luncheon provision had not been made, there was an attempt to remedy the situation by Mr. Conway contacting the hotel management, but unfortunately the details as to where the additional facilities would be located was not available in time to make an announcement from the platform before the meeting adjourned. We hope there will be no repetition in the future.

Now, gentlemen, so far as I know there is no unfinished business to be disposed of at this time. Is there any new business that any person would like to present for con-



sideration? Apparently there is none, so I will now say to Mr. Abbott that the Railway Club of Pittsburgh wishes to express its sincere thanks for his having come here from Ann Arbor and presenting this intricate subject in such an interesting and intelligent manner which we have all so thoroughly enjoyed.

With the announcement that luncheon arrangements are at either end of the room, the meeting will now stand adjourned.

J. D. CONWAY, Secretary.





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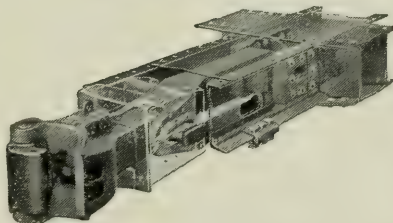
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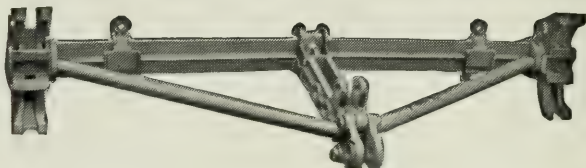
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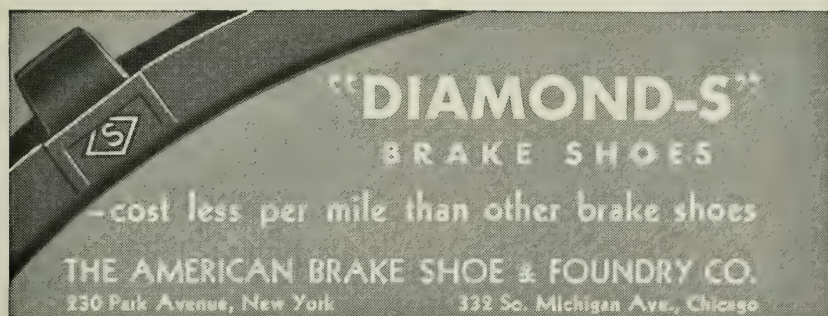


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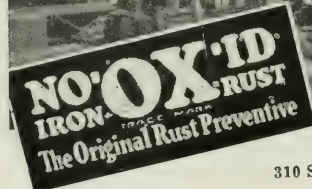


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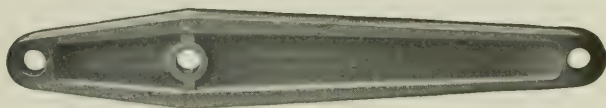
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| KOPPERS PRODUCTS<br>AND WHERE THEY APPLY<br>IN THE<br>RAILROAD FIELD | TREATED<br>TIMBER,<br>TIES, POSTS,<br>ETC. | ROOFING<br>MATERIALS | PISTON<br>RINGS | COAL | WATER-<br>PROOFING<br>MATERIALS | BITUMINOUS<br>PAINTS | TARMAC<br>ROAD<br>MATERIALS | FAST'S<br>COUPLINGS | CREOSOTE | CYLINDER<br>AND VALVE<br>PACKING | WEED<br>KILLERS | INSECTI-<br>CIDES<br>AND<br>DISINFEC-<br>TANTS | PLATE<br>WORK | CAR<br>FERRIES,<br>RAILROAD<br>BARGES,<br>ETC. |
|----------------------------------------------------------------------|--------------------------------------------|----------------------|-----------------|------|---------------------------------|----------------------|-----------------------------|---------------------|----------|----------------------------------|-----------------|------------------------------------------------|---------------|------------------------------------------------|
| ROADBEDS                                                             | A                                          |                      |                 |      |                                 |                      |                             |                     | D        |                                  | F               |                                                |               |                                                |
| LOCOMOTIVES                                                          |                                            |                      | C               | B    |                                 | D                    |                             |                     |          | C                                |                 |                                                |               |                                                |
| STATIONS                                                             | A                                          | D                    |                 | B    | D                               | D                    |                             |                     | D        |                                  |                 | F                                              |               |                                                |
| SHOPS                                                                | A                                          | D                    | C               | B    | D                               | D                    |                             | E                   | D        |                                  |                 | F                                              | E&G           |                                                |
| BRIDGES                                                              | A                                          |                      |                 |      | D                               | D                    | D                           |                     | D        |                                  |                 |                                                | E&G           |                                                |
| TUNNELS                                                              | A                                          |                      |                 |      | D                               | D                    | D                           |                     |          |                                  |                 |                                                | E&G           |                                                |
| DRIVEWAYS                                                            | A                                          |                      |                 |      | D                               |                      | D                           |                     |          |                                  | F               |                                                |               |                                                |
| POWER HOUSES                                                         | A                                          | D                    | C               | B    | D                               | D                    |                             | E                   | D        | C                                |                 |                                                | E&G           |                                                |
| STRUCTURAL                                                           | A                                          | D                    |                 |      | D                               | D                    |                             |                     | D        |                                  |                 |                                                | E&G           |                                                |
| GRADE CROSSINGS                                                      | A                                          |                      |                 |      |                                 |                      | D                           |                     |          |                                  |                 |                                                |               |                                                |
| CATTLE PENS                                                          | A                                          | D                    |                 |      | D                               | D                    |                             |                     | D        |                                  |                 | F                                              |               |                                                |
| RAILROAD MARINE<br>OPERATIONS                                        | A                                          | D                    | C               | B    | D                               | D                    |                             |                     | D        | C                                |                 | F                                              | E&G           | H                                              |

A—The Wood Preserving Corporation, Pittsburgh, Pa. B—The Koppers Coal Company, Pittsburgh, Pa. C—American Hammered Piston Ring Division, Baltimore, Md. D—Tar and Chemical Division, Pittsburgh, Pa. E—Bartlett Hayward Division, Baltimore, Md. F—The White Tar Company of New Jersey, Inc. G—Western Gas Division, Fort Wayne, Ind. H—The Maryland Drydock Company, Baltimore, Md.





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The fiscal year ends with the month of October.

### The Railway Club of Pittsburgh:

19.....

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Name.....

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Company.....

My Address.....

Recommended by.....

# OFFICIAL PROCEEDINGS

OF

## The Railway Club of Pittsburgh

Organized October 18, 1901

Vol. XXXVII.  
No. 2

**Pittsburgh, Pa., Dec. 16, 1937**

\$1.00 Per Year  
25c Per Copy

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 C. W. TRUST, Asst. Traffic Mgr., U. S. Steel Corporation Subsidiaries, Pittsburgh, Pa.

## PAST PRESIDENTS:

|                        |                    |               |
|------------------------|--------------------|---------------|
| *J. H. McCONNELL.....  | October, 1901, to  | October, 1903 |
| *L. H. TURNER.....     | November, 1903, to | October, 1905 |
| *F. H. STARK.....      | November, 1905, to | October, 1907 |
| *H. W. WATTS.....      | November, 1907, to | April, 1908   |
| *D. J. REDDING.....    | November, 1908, to | October, 1910 |
| *F. R. McFEATHERS..... | November, 1910, to | October, 1912 |
| *A. G. MITCHELL.....   | November, 1912, to | October, 1914 |
| *F. M. McNULTY.....    | November, 1914, to | October, 1916 |
| *J. G. CODE.....       | November, 1916, to | October, 1917 |
| *D. M. HOWE.....       | November, 1917, to | October, 1918 |
| *J. A. SPIELMAN.....   | November, 1918, to | October, 1919 |
| H. H. MAXFIELD.....    | November, 1919, to | October, 1920 |
| FRANK J. LANAHAN.....  | November, 1920, to | October, 1921 |
| *SAMUEL LYNN.....      | November, 1921, to | October, 1922 |
| *D. F. CRAWFORD.....   | November, 1922, to | October, 1923 |
| *GEO. D. OGDEN.....    | November, 1923, to | October, 1924 |
| A. STUCKI.....         | November, 1924, to | October, 1925 |
| F. G. MINNICK.....     | November, 1925, to | October, 1926 |
| G. W. WILDIN.....      | November, 1926, to | October, 1927 |
| E. J. DEVANS.....      | November, 1927, to | October, 1928 |
| W. S. McABEE.....      | November, 1928, to | October, 1929 |
| E. W. SMITH.....       | November, 1929, to | October, 1930 |
| LOUIS E. ENDSLEY.....  | November, 1930, to | October, 1931 |
| *JOHN E. HUGHES.....   | November, 1931, to | October, 1932 |
| F. I. SNYDER.....      | November, 1932, to | October, 1933 |
| C. O. DAMBACH.....     | November, 1933, to | October, 1934 |
| R. H. FLINN.....       | November, 1934, to | October, 1935 |
| R. P. FORSBERG.....    | November, 1935, to | October, 1936 |
| E. A. RAUSCHART.....   | November, 1936, to | October, 1937 |

\*—Deceased.

Meetings held fourth Thursday of each month except June, July and August.



## PROCEEDINGS OF MEETING

DECEMBER 16, 1937

The meeting was called to order at the Fort Pitt Hotel at eight o'clock P. M., with President G. M. Sixsmith in the Chair:

Registered attendance 360, as follows:

### MEMBERS

|                       |                          |
|-----------------------|--------------------------|
| Adams, F. W.,         | Cunningham, J. D.,       |
| Ainsworth, J. H.,     | Curley, Walter J.,       |
| Aivalotis, John,      | Dalzell, W. E.,          |
| Allen, Earl M.,       | Dambach, C. O.,          |
| Ambrose, W. F.,       | Davis, Charles S.,       |
| Ames, Louis,          | Daugherty, W. A.,        |
| Anderson, J. P.,      | Dean, E. E.,             |
| Arnold, J. J.,        | Dean, Robert W.,         |
| Badgett, S. H.,       | Dean, W. A.,             |
| Balla, J. A.,         | Dickinson, T. R.,        |
| Balzer, C. E.,        | Dickson, K. B.,          |
| Barr, H. C.,          | Diven, J. B.,            |
| Baughman, G. W.,      | Dunham, C. W.,           |
| Baumann, E. G.        | Eaton, Fred'k. H.,       |
| Beaver, Roy C.,       | Emery, E.,               |
| Beitsch, George F.,   | Endsley, Prof. Louis E., |
| Beltz, J. D.,         | Failor, Charles W.,      |
| Bender, H. P.,        | Fair, J. M.,             |
| Bixler, Warren,       | Farlow, G. B.,           |
| Black, C. R.,         | Faustman, Paul L.,       |
| Brennan, J. T.,       | Ferguson, George,        |
| Britt, T. E.,         | Finegan, T. A.,          |
| Bryant, L. J.,        | Fitzgerald, T.,          |
| Buckley, William,     | Flinn, R. H.,            |
| Burel, W. C.,         | Fowler, W. E.,           |
| Button, L. R.,        | Fralic, C. F.,           |
| Carr, T. W.,          | Frauenheim, A. M.,       |
| Chesley, J. O.,       | Frauenheim, Pierce,      |
| Chilcoat, H. E.,      | Freshwater, F. H.,       |
| Cipro, Thomas,        | Fry, Lawford H.,         |
| Clark, C. C.,         | Fulkerson, A.,           |
| Clowes, W. K.,        | Galbraith, James R.,     |
| Colbert, J. T.,       | Gilbert, William J.,     |
| Condon, William, Jr., | Gillespie, J. Porter,    |
| Conway, J. D.,        | Glaser, C. J.,           |
| Coombe, A. B.,        | Gleeson, H. L.,          |
| Courtney, Harry,      | Goda, P. H.,             |
| Crawford, A. B.,      | Goldstrom, G. E.,        |
| Cudworth, H. D.,      | Graham, Charles J.,      |

Gray, G. M.,  
 Hackett, S. E.,  
 Hance, R. H.,  
 Hansen, William C.,  
 Hassler, E. S.,  
 Hawkins, Paul R.  
 Helsel, W. G.,  
 Hemma, Charles,  
 Hengst, Guy E.,  
 Hepburn, P. W.,  
 Herrold, A. E.,  
 Hess, Charles A.,  
 Hilstrom, A. V.,  
 Hocking, Harry  
 Holmes, E. H.  
 Hoover, J. W.,  
 Hovey, O. W.,  
 Hunt, Roy A.,  
 Huston, F. T.,  
 Hutchinson, G. C., Jr.,  
 James, J. H.,  
 Jakovac, Victor,  
 Jeffrey, John,  
 John, William,  
 Johnson, J. W.,  
 Johnson, W. M.,  
 Kaup, H. E.,  
 Kearfott, W. E.,  
 Keiser, C. E.,  
 Kemble, T. J.,  
 Kentlein, John,  
 Knable, G. Elkins,  
 Kroen, Vincent,  
 Lanahan, Frank J.,  
 Lanning, E. H.,  
 Larson, W. E.,  
 Lavine, Ralph D.,  
 Lewis, N. F.,  
 Logan, J. W., Jr.,  
 Long, R. M.,  
 Longstreth, W. L.,  
 Lowry, William F., Jr.,  
 Lundeen, C. J.,  
 Maliphant, C. W.,  
 Masterman, T. W.,  
 Matchett, H. K.,  
 Matchneer, W. W.,  
 Maxwell, R. E.,  
 Mayer, L. I.,  
 Menk, C. W.,  
 Millar, C. W.,

Miller, J. B.,  
 Misner, George W.,  
 Mitchell, W. S.,  
 Moir, W. B.,  
 Molyneaux, Dawes S.,  
 Monk, J. Thomas,  
 Morgan, Homer C.,  
 Mowery, John F.,  
 Mussey, D. S.,  
 Myers, Arnold,  
 McAndrew, R. E.  
 McCune, J. C.,  
 McKim, Hollis,  
 McKinley, John T.,  
 McNamee, W.,  
 Nathan, W. S.  
 Noonan, Daniel,  
 O'Reilly, G. Arthur,  
 Parvin, C. F.,  
 Peebles, A. T.,  
 Pehrson, Alfred K.,  
 Perreas, S. J.,  
 Posteraro, S. F.,  
 Pringle, H. C.,  
 Purchard, Paul,  
 Ralston, J. A.,  
 Rau, W. R., Jr.,  
 Reagan, Henry V.,  
 Reed, Earl W.,  
 Richardson, E. F.,  
 Rupp, E. S.,  
 Rutter, H. E.,  
 Schadt, A. D.,  
 Schiller, John,  
 Schmitt, Raymond F.,  
 Schramm, G. N.,  
 Schrecongost, C. P.,  
 Searles, E. J.,  
 Severn, A. B.,  
 Shellenbarger, H. M.,  
 Sheridan, T. F.,  
 Shields, J. T.,  
 Showalter, Joseph  
 Shuster, W. W.,  
 Sixsmith, G. M.,  
 Smith, G. M.,  
 Smith, Lewis H.,  
 Snyder, F. I.,  
 Staats, Kenneth A.,  
 Stamets, William K.,  
 Stamm, Bruce B.,

|                        |                      |
|------------------------|----------------------|
| Stevenson, H. G.,      | Van Krogh, F. F.,    |
| Stoffregen, Louis E.,  | Vollmer, Karl L.,    |
| Stucki, A.,            | Vowinkel, Fred F.,   |
| Suckfield, G. A.,      | Walter, E. R.,       |
| Sudell, D. W.,         | Welton, A. A.,       |
| Sutherland, Lloyd,     | Wickerham, F. A.,    |
| Sutton, K. B.,         | Wikander, O. R.,     |
| Terkelsen, B.,         | Wilson, J. N.,       |
| Teskey, Dr. Walter J., | Wilson, James R.,    |
| Thomas, George P.,     | Wilson, W. H.,       |
| Thornton, A. W.,       | Wilt, Howard H.,     |
| Tracey, J. B. A.,      | Winter, Paul S.,     |
| Troxell, Henry K.,     | Winton, C. A.,       |
| Tryon, Ira D.,         | Woodward, R.,        |
| Tuttle, C. L.,         | Woollen, A. H.,      |
| Unger, Dr. J. S.,      | Wright, C. W.,       |
| Urtel, E. J.,          | Yarhouse, Walter T., |
| Utzler, Elmer S.,      | Yohe, J. K., Jr.,    |
| Young, Paul S.,        |                      |

## VISITORS

|                      |                        |
|----------------------|------------------------|
| Backus, C. E.,       | Dudley, H. M.,         |
| Bailery, W. N.,      | Dusch, Louis S.,       |
| Bash, J. E.,         | Euler, R. S.,          |
| Bauch, Miss Lucille, | Fairless, B. F.,       |
| (Soloist)            | Farbocher, J. B.,      |
| Barton, Paul A.,     | Fieker, Paul J.,       |
| Beck, Howard S.,     | Finger, P. E.,         |
| Bell, Dan H.,        | Finney, Don,           |
| Benton, John B.,     | Finney, G. C.,         |
| Bessinger, H. L.,    | Flanagan, J. E.,       |
| Bierman, William,    | Gallaw, Joseph A.,     |
| Bishetrieder, J. M., | Geisler, John W., Jr., |
| Blaine, C. H.,       | Gilbert, H. H.,        |
| Blank, Joseph,       | Gloeckner, August P.,  |
| Bramble, J. H.,      | Grego, John,           |
| Brandt, Howard,      | Hahn, H. A.,           |
| Brenshi, Robert,     | Halleran, H. J.,       |
| Bronson, C. B.       | Hanley, William J.,    |
| Buel, Hillhouse,     | Heims, William H.,     |
| Burriss, H. E.,      | Heist, A. A.,          |
| Christianson, R.,    | Hirshfeld, C. F.,      |
| Corlett, L. Edward,  | Holt, W. H.,           |
| Cotton, C. S.,       | Hostler, N. R.,        |
| Cready, Russell J.,  | Howert, Arthur S.,     |
| Crissman, R. M.,     | James, Sam,            |
| Dailey, Thomas,      | Janner, F. H.,         |
| Dankmyer, F. C.,     | Jencka, Anthony,       |
| Davis, William B.    | Jenks, P. G.           |
| Dodds, Richard S.,   | Johnson, C. A.,        |

Johnston, F. D.  
Jolly, T. D.,  
Jones, Russell,  
Joyce, S. F.,  
Kelin, A. W.,  
Kleppich, William V.,  
Knowlton, J. A.,  
Koerner, J. H.,  
Kolos, Joseph,  
Kratofil, Joseph,  
Lagergren, R. H.,  
Lais, G. J.,  
Leech, B. E.,  
Lesko, Andy,  
Lewis, S. B.,  
Liddle, C. A.,  
Lumpp, R. J.,  
Mace, J. C.,  
Mace, James,  
Mace, R. E.,  
Mapp, C. P.,  
Mellor, Harry,  
Mentar, Ernest A.,  
Miller, Howard N.,  
Molyneaux, L. S.,  
Moore, W. G.,  
Muir, I.,  
Munroe, P. F.,  
Murtland, DeLoss,  
Mussey, W. H.,  
Muylaert, D.,  
Mycoff, G. H.,  
McGall, William,  
McGee, Robert,  
McGowan, C. H.,  
McKee, Charles J.,  
McKindree, C. L.,  
Nicholson, E.,  
Odle, H.,  
Oyen, Finn,  
Pentecost, W. G.,  
Pickels, H. D.,  
Pierrel, Charles A.,

Reed, John A.,  
Reger, Henry P.,  
Reynolds, D. E.,  
Roen, T.,  
Rushton, H. J.,  
Sadlat, T. F.,  
Saklatwalla, B. D.,  
Sanborn, S. W.,  
Schmitt, William J.,  
Seibert, Frank T.,  
Sexton, E. P.,  
Shirley, G. W.,  
Smith, H. I.,  
Snead, J. R.,  
Snyder, M. J.,  
Staib, Harry,  
Stamm, J. Duncan,  
Stertzbach, H. W.,  
Stevens, Charles H.,  
Stewart, J. M.,  
Stinson, C.,  
Stoner, C. E.,  
Thomas, Edgar C.,  
Tonkin, Bart,  
Urban, C. E.,  
Vaughn, J. E.,  
Vold, L. H.,  
Waldo, C.,  
Ward, Anthony,  
Warneke, Louis A.,  
Whetzel, J. C.,  
Wiechelt, W. L.,  
Williams, Alfred O.,  
Williams, H. O.,  
Wilson, Richard,  
Winterburn, C. T.,  
Wishart, Blair G.,  
Woelslagle, E.,  
Wolff, Frank W.,  
Woodson, George Ed.,  
Youngk, W. E.,  
Yuengew, L. C.,  
Zell, Harry A.,



## N O T E

Mr. Sixsmith, President, announced at the last meeting that the next meeting would be held January 20th instead of the regular date. This plan has been changed and our regular meeting will be held January 27, 1938, at which time we will have a lecture, illustrated by motion picture film, on the San Francisco-Oakland Bay Bridge presented by Mr. C. F. Goodrich, Chief Engineer, American Bridge Company.

(The Jones & Laughlin, Pittsburgh Works, Employees' Male Orchestra played "Strike Up the Band".)

PRESIDENT: Gentlemen, may I have your attention, please?

You are being entertained tonight by the Jones & Laughlin, Pittsburgh Works, Employees' Male Chorus and Orchestra. Mr. Gillespie, with such assistance as he may have received, is to be congratulated on inducing this musical organization to come here tonight for our entertainment. It is with considerable pleasure that I now present to you the Director of this organization, Mr. James Mace.

MR. MACE: We are indeed glad to be here tonight and will do our best to entertain you.

The Male Chorus rendered an excellent program which was received with much enthusiasm.

Miss Lucille Bauch sang several solos, as well as a song with the Chorus, her performance being received with great applause.

Dick Dodds of the Male Chorus rendered an unusually fine solo, "Lovely One," which was followed by an exceptional rendition of "Hill Billy" music by the Jones and Laughlin "Mill Billies". Dick and Babe Wilson, "Colorful" dancers, delighted the audience with an exhibition of tap dancing that left nothing to be desired.

PRESIDENT: For the benefit of the late comers, I will repeat the announcement made earlier this evening that the splendid entertainment which we all have so much enjoyed is

by the Jones & Laughlin, Pittsburgh Works, Male Chorus and Orchestra.

Now, Mr. Mace, on behalf of the Railway Club of Pittsburgh, I wish to express our hearty thanks to you and your wonderful organization of entertainers, as well as the Company you represent, for the program that has been presented for our enjoyment.

And, now gentlemen, we must get down to business. First of all, I want to say that it is certainly a pleasure to have the privilege of greeting such a large attendance as we have here this evening, especially since we have been encountering so much uncertain weather. As the entertainment took up considerable time, it will be necessary for us to hurry through the regular procedure. We will dispense with the roll call as usual for the reason that the attendance is recorded by registration cards received at the door, and likewise, as the proceedings of our previous meeting are already in print and distributed it will be unnecessary for us to read the minutes of that meeting at this time.

We will now hear from the Secretary as to new proposals for membership.

**SECRETARY:** We have the following proposals for membership:

- Ames, Louis, Supervisor A. E. D. Department, Air Reduction Sales Company, 1116 Ridge Avenue, N. S., Pittsburgh, Pa. Recommended by T. E. Britt.
- Anderson, J. P., Chief Engineer, Pressed Steel Car Company, Inc., Grant Building, Pittsburgh, Pa. Recommended by M. C. Blest.
- Badgett, Stephen H., Engineering Department, Pressed Steel Car Company, Inc., 120 North Sprague Avenue, Bellevue, Pittsburgh, Pa. Recommended by M. C. Blest.
- Blomgren, E. A., Lubrication Engineer, The Texas Company, 3719 Gwynn Oak Avenue, Baltimore, Md. Recommended by S. B. Riley.
- Bukey, J. W., Foreman, Pennsylvania Railroad, 1507 Third Street, Beaver, Pa. Recommended by W. B. Moir.
- Correy, Carroll Lehr, Asst. Train Master, Pennsylvania Railroad, Box 351, East Brady, Pa. Recommended by E. S. McCormick.
- Fulkerson, Abram, Supervisor—Track, Pennsylvania Railroad, 401 Center Avenue, Aspinwall, Pa. Recommended by G. M. Sixsmith.
- Golden, A. B., Assistant Storekeeper, Pennsylvania Railroad, 216 Locust Street, Avalon, Pittsburgh, Pa. Recommended by W. B. Moir.
- Goodman, F. T., Goodman Engine & Machine Company, South 15th and Muriel Streets, Pittsburgh, Pa. Recommended by G. M. Sixsmith.
- Keene, John C., Sales Representative, Illinois Railway Equipment Company, 80 East Jackson Boulevard, Chicago, Ill. Recommended by S. B. Riley.
- Kemble, Thomas J., Salesman, Johns-Manville Sales Corporation, 1530 Builders Exchange, Cleveland, Ohio. Recommended by T. F. Sheridan.
- Miller, J. S., Treasurer, J. S. Miller Machinery Company, 342 S. Graham Street, Pittsburgh, Pa. Recommended by G. M. Sixsmith.
- Monk, Thomas J., Acting Superintendent, Lockhart Iron & Steel Company, 3015 Merwyn Avenue, Sheraden, Pittsburgh, Pa. Recommended by J. Porter Gillespie.
- McCullough, Harry R., Jr., Sales Representative, Signode Steel Strapping Company, Grant Building, Pittsburgh, Pa. Recommended by W. B. Moir.
- Parvin, C. F., Assistant Supervisor—Track, Pennsylvania Railroad, 109 Brilliant Avenue, Aspinwall, Pa. Recommended by G. M. Sixsmith.
- Reagan, Henry V., Inspector, Westinghouse Air Brake Company, 2261 Hawthorne Avenue, Swissvale, Pa. Recommended by N. F. Lewis.

Scales, Lewis J., Field Engineer, Signode Steel Strapping Company, Grant Building, Pittsburgh, Pa. Recommended by W. B. Moir.  
Shields, J. T., Electrician, Duquesne Light Company, 2818 Perrysville Avenue, N. S., Pittsburgh Pa. Recommended by H. E. Rutter.  
Utzler, Elmer S., Pressed Steel Car Company, Inc., Grant Building, Pittsburgh, Pa. Recommended by M. C. Blest.  
Wallace, O. T., Assistant Electrical Supervisor, P. & L. E. R. R. Co., 419 Market Street, West Bridgewater, Pa. Recommended by E. F. Brown.  
Wolf, H. W., Assistant Director of Purchases, Westinghouse Air Brake Company, 4403 Center Avenue, Pittsburgh, Pa. Recommended by G. M. Sixsmith  
Wright G. I., Manager, Transportation Sales Department, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. Recommended by T. C. Wurts.

I didn't count them, but I think there are about nineteen.

PRESIDENT: These proposals, in accordance with our usual practice, will be turned over to the Executive Committee for the customary consideration. If any of the gentlemen whose names have been read are here tonight, I think we can say to them that we can anticipate favorable action on the part of that Committee. Therefore, we take this opportunity to welcome them as members of this Club and hope their future connection with it will be well worth while.

Mr. Secretary, are there any announcements?

SECRETARY: No announcements, Mr. President.

PRESIDENT: Is there any new business to come before the Club?

(No response.)

If not, we will now come to the speaker of the evening, but before introducing the gentleman I would like to say that I understand there is a large delegation here tonight from Butler in his honor, and I wish especially to extend to those friends from Butler, and for that matter any other visitors who may be here tonight, the greetings of the Railway Club of Pittsburgh. I hope these visitors enjoy our program and will again honor us with a visit on the occasion of some of our future meetings.

Your speaker tonight is Mr. W. H. Mussey, Engineer of Research, Pullman - Standard Car Manufacturing Company, Chicago, Illinois, who will present a sound film showing the construction of passenger and freight cars of the new welded light weight type. I understand that this presentation consumes about 30 minutes and as I have just been informed that the picture operator has several pictures of important football games that can be shown in about 12 minutes, I have with your permission arranged that these football pictures

will be shown immediately following Mr. Mussey's talk and before any discussion is had with respect to his remarks. It is now with a great deal of pleasure that I present to you this affable gentleman from Chicago, Mr. Mussey.

## **CONSTRUCTION OF LIGHT WEIGHT CARS**

By **W. H. MUSSEY**, Engineer of Research, Pullman-Standard Car Manufacturing Company, Chicago, Ill.

The whole country is becoming weight conscious and the Railroads and Allied Industries are alive to the irresistible urge. Much has been done and will be done to not only meet this condition but may be in a relatively few years to change the whole railroad equipment picture.

Stating it bluntly, the saving of a pound of dead weight is of the most vital economic importance.

The more dead weight you save the less the demand on the power plant that hauls the train. Take a glance at the results to be obtained from the saving of dead weight, consider the two types of service—passenger and freight.

**PASSENGER SERVICE.**—The public demand and the railroads are speeding up train schedules. In all cases the schedule is dependent upon the ability of the power plant to do the job and that means get into the terminal on time, taking into account not only the tightness of the schedule but delays usual and unusual that are bound to occur.

Railroads will not reduce the number of cars hauled below passenger space requirements and the operation of two sections where one should answer, is not worthy of consideration.

There are two vital factors which combine to make up train resistance and determine the amount of work the power plant must do—wind pressure and weight.

Streamlining is a very important item at very high speeds and on short trains but as the length of train increases the advantage gained by streamlining decreases due to increase in skin friction. However, it is not my intention to say "no good". It contributes to reduction of train resistance, has eye appeal, and the public likes it. They sense that they are on a modern high speed train.

When it comes to starting, accelerations after slow-downs and mounting grades it is reduction in weight, not



streamlining that counts. From our own knowledge most high speed passenger train schedules stand or fall due to the ability of the power plant to properly handle starting, acceleration and grades and their importance seems to progress in the order named.

Above all, and under any condition saving of dead weight permits train speed of more miles per hour.

One might ask why not increase the size and capacity of the power plant. If it were practical by so doing to meet the power requirements imposed in making high schedules with heavy trains, it would be undesirable from an economic standpoint, for reasons that must be obvious to all.

As a proof of this, the manufacturer of the power plant, whether it be a steam locomotive or an internal combustion engine, is the staunchest advocate of the lightweight train for high speed service.

No matter from what angle you view the problem, the solution is reduction in dead weight of passenger train equipment if you wish to meet present day requirements and do so economically.

**FREIGHT SERVICE.**—The Freight car offers a field only casually explored as to the savings that will result from the reduction in dead weight tonnage. I quote an article written by Mr. A. F. Stuebing, Railway Mechanical Engineer of the United States Steel Corporation:-

**“PERCENT OF DEADWEIGHT TO LOAD” (EXCLUDING  
LOCOMOTIVE & TENDER)**

Average for all Freight Service, Class 1 Roads

| Year |        |
|------|--------|
| 1920 | 104.40 |
| 1921 | 120.43 |
| 1922 | 116.56 |
| 1923 | 115.84 |
| 1924 | 122.09 |
| 1925 | 124.46 |
| 1926 | 124.87 |
| 1927 | 129.00 |
| 1928 | 131.81 |
| 1929 | 131.96 |
| 1930 | 138.21 |

|      |        |
|------|--------|
| 1931 | 146.93 |
| 1932 | 153.84 |
| 1933 | 149.64 |
| 1934 | 149.30 |

An examination of this tabulation brings out the fact that heavy traffic is conducive to a favorable ratio, and vice versa. Changes in the proportion of loaded to total mileage also affect the figures. However, when allowance has been made for these factors, there still remains a large increase in the ratio of dead weight to load which is due solely to the increase in the average dead weight per car, from 20.1 ton in 1920 to 22.8 tons in 1933, and the concurrent falling off of the average load per car, from 29.3 tons in 1920 to 25.6 in 1933. The competition of other means of transportation has been largely responsible for the decrease in the average load and such competition hinders the railroads from using effective means for insuring heavier loading. Therefore, efforts to secure a more favorable relation between the weight of the car and the load which it carries must be directed primarily toward the utilization of lighter cars.

The average operating speed of freight trains has increased from 11.9 m.p.h. in 1926 to 15.94 in 1934."

Now let's go further, a saving of 5 tons in dead weight of a box car means approximately 54,000 ton miles per year. If all of the 730,000 box cars in service each represented a like reduction the saving would be 39,420,000,000 ton miles per year.

It is self evident to all that have made even the most casual study of car design and car structures that the only possible way that we may reduce weight in car framing structures is to reduce the cross-sectional area or thickness of the sections, plates, bars and sheets that go to make up this structure and thereby take full advantage of the physical characteristics of the steel.

Of course, the customary riveting of car structures has proved very satisfactory in conventional car design because the heavier sections provide sufficient bearing area for the rivets. The net section left in the sheet, plates, etc., after the holes are punched in them is sufficient to develop proper strength in the car framing and it isn't necessary that the car represent in effect a one-piece structure because the members are of sufficient size to stand various concentrations

of stress and deflection. However, when we come to the thinner members it is necessary to obtain proper strength and weather tightness, and that means rivets, if used, must be placed very close together, in the case of both superstructure and underframe. Then the net sections of a plate or sheet available to withstand severe service has been very markedly decreased. Furthermore, naturally the rivets would be of such size that they couldn't withstand the extreme concentrations produced by impacting stresses.

A study of welded construction convinced us that a welded structure properly designed and built would produce the strongest and lightest car and welding with us is used as a means to produce the result—the light weight car.

It was further decided that the light sheets and in fact practically all of the superstructure would have to be spot-welded, both from a design and commercial standpoint. Arc or gas welding has the greater value in fabricating the underframe members, and should be used therefore for the best results.

In April of this year we were authorized to build another welded box car, of the new A. A. R. dimensions which are larger than the previous standard. The car was completed in May and was on exhibition at the A. A. R. Convention at Atlantic City in June. It represented a saving of approximately 5 tons in dead weight over the A. A. R. box car of similar large dimensions.

This car has been subjected to most severe static and live load vertical loading and high speed impact tests. The A. A. R. representatives and many railroad men were present and witnessed these tests. None of the members of the car structure were distorted. Of the approximately 14,000 spot welds in the superstructure not one of them let go. In other words we have proved that welded lightweight structures as represented by this car will assure the Railroads of the ultimate in lightweight and strength, that the cars will not be on the repair track but in service and the study of construction methods has convinced our Company and they have stated publicly, "This car can be produced without any premium in cost over the conventional riveted car."

As a further step in connection with the statement above, one of our freight car building plants is providing facilities and equipment has been ordered and will be installed for pro-

ducing approximately 25 cars a day of this light weight welded construction. The plans are to have this plant in operation within the first month of the coming year. The welding equipment will be largely automatic and the handling and fabrication will eliminate as far as possible manual handling.

It gives me great pleasure to show you by means of the movie films the construction and welding of both light weight passenger and freight cars built of Cor-Ten high tensile steel or its equivalent.

A study of the construction and welding of these frames or shells will illustrate the thoroughness of the study we have made to produce these cars and the methods by which they are produced.

I wish to emphasize again that our whole interest in the art of arc and spot welding is as a means to produce the lightest, strongest and safest car which will not suffer by comparison as far as these qualities are concerned with the best of the conventional cars built previously to the introduction of this light weight equipment.

These films are in two parts, the first illustrates the building by the welded method of a steel passenger car body and the second part covers the building of light weight welded box cars and as a further matter of interest in this film we illustrate severe tests to which this car was subjected without producing any defects or distortions whatever.

Previous to address by Mr. Mussey a sound film was presented illustrating construction of passenger and freight cars of the new welded light weight type.

PRESIDENT: We are now ready for any discussion that you may care to indulge in with Mr. Mussey. I am sure he will be very glad to answer any questions you may wish to ask him. Is there any one here who would like to ask Mr. Mussey a question at this time?

QUESTION: What is the difference between the shot weld and the spot weld?

MR. MUSSEY: Name. They are all closely controlled welds or they would not be good welds. All welds that are good welds are controlled as to time, current, pressure and what have you. I believe "shot weld" is a copyrighted term.



QUESTION: Mr. Mussey, what is the composition of your electrodes used in the spot welding?

MR. MUSSEY: It is what is called "Elconite" or similar material.

QUESTION: Elconite and not tipped?

MR. MUSSEY: No, we do not do that. The answer is in this method of cooling we have with high velocity water right close to the electrode. You can use them for a long time without any trouble whatever if there is no burning. I might say if you had burning you would not have a good weld because the electrode would adhere to the metal.

QUESTION: Does the welding weaken the metal immediately around the weld? Does the heating affect it?

MR. MUSSEY: That is a matter of control. If you properly control it and do it in a quick enough time it should have no appreciable affect. In the best welds, as we know them, you must be certain as to the kinds of steel used. Without that there might be a very detrimental affect.

QUESTION: What about stress relief?

MR. MUSSEY: The only reason I would know for stress relief in spot welding, if that is what you have in mind, would be with very heavy members in the materials we use. As far as we are concerned we do not think, on a commercial production basis, with commercial production methods, a position has been reached where you can handle such materials in spot welding. It is not practical as a commercial production. It may be in time. As a matter of fact, we made a lot of tests when certain things occurred for which there was no special reason. In other words, if you had a burning or a special gauge or something like that there would be a certain reason for it. It might be because of certain alloys you put in that would have some effect, but with normal high-tension steel it does not seem to be necessary. In fact, we impact the under-frames at such extreme speeds that if anything were there to show up at all it would immediately show up, on the spot welds. There is no distortion apparent on these tests any place.

QUESTION: Do you do any pickling?

MR. MUSSEY: On spot welding you must do pickling. You cannot sand blast.

QUESTION: Are any of the under-structures of these cars arc welded and are the materials of any kind of high-carbon steel?

MR. MUSSEY: No, we keep to the lower carbons. The under-frame is all arc welded. The Steel Companies tell us the lower carbons are the thing to stick to.

MR. SEVERN: Did you ever have any previous experience; may be with fifty or sixty carbon?

MR. MUSSEY: We tried it, but it was not successful. We have not put it in car structures.

QUESTION: I had the privilege of riding the first light-weight Pullman and my impression was that the riding qualities were not so good in that first train.

MR. MUSSEY: They were not. It was a new thing and we were pioneering. That train and succeeding ones have very satisfactory riding comfort. Everything is a matter of evolution. You do not always hit it the first time, but you have to first produce something to know how it acts.

PRESIDENT: Gentlemen, you have been quite patient and if you will be patient for just a few moments longer I think we can close this meeting within about our usual time.

However, I would like to say a few words respecting the membership situation. When we started this fiscal year we were carrying in our records a total of 1,371 members. That compares with 1,381 at the commencement of the pervious fiscal year which I believe you will agree with me is a very good showing and speaks well for the continued interest in the affairs of this Club. The question of membership is always an important subject to talk about and do what we can to encourage the enrollment of new members. You know, of course, we must rely largely on dues to defray the expenses of the Club and the more members we have the better our conditions become. Also, it is essential that provision be made for offsetting loss of members for any reason if we are to keep up our total membership. I would like to see the day when our membership will cross the 1,500 mark. Of course, I am not so bold as to think and expect that this

can be accomplished during my term of office, but with the co-operation of you gentlemen I believe we should be able to make a fairly good start in that direction during the present year. New members are not difficult to secure, as you all very well know, and for the benefit of persons here tonight who may not be well acquainted with our affairs I would like to say the annual dues are only \$3.00 a year. We have nine meetings with a smoker in conjunction with the annual meeting each Fall, and the proceedings of each meeting are printed in book form.

Since our last regular meeting, I am glad to be able to report to you that we had what I regard was a rather enthusiastic meeting of the Chairmen of the various Committees with the result that a very ambitious program is being outlined for this year which we hope can be adhered to or nearly so. This program provides for securing the very best talent possible as speakers and providing as varied a program of subjects as can be arranged for.

I think this might be a good moment to ask Mr. Flinn if he will say a few words.

MR. FLINN: Mr. President and gentlemen. You have listened here tonight to a very fine presentation on the subject of the actual manufacture of light-weight standard equipment. It is only to be hoped that, in the course of the next year, maybe the railroads will have enough money to buy a few of these new cars.

I think we should, at this time, express our appreciation to Mr. Mussey and the Pullman-Standard Car Manufacturing Company and I move you we do so through a rising vote of thanks.

(Motion duly seconded).

(RISING VOTE OF THANKS).

PRESIDENT: Before asking for an adjournment motion, as this is the last meeting of the 1937 series, wont you let me be the first, or at least one of the first, to wish you all a very merry Christmas and a happy New Year.

Now a motion to adjourn is in order.

There being no further discussion, ON MOTION the meeting was adjourned with the pronouncement that lunch was ready for serving at either end of the room.

J. D. CONWAY, Secretary.

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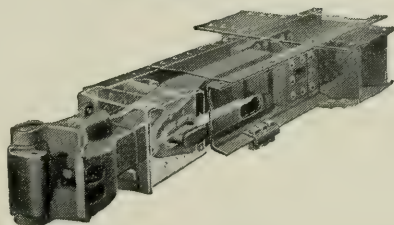
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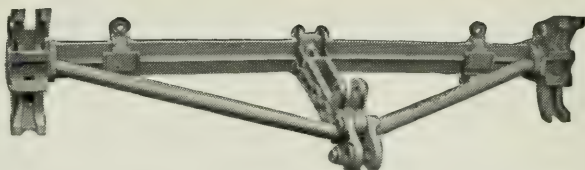
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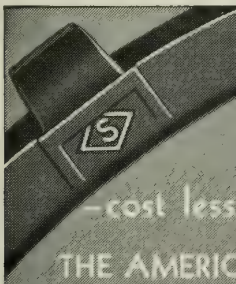


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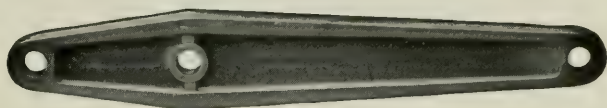
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| Noon Luncheons            | - | - | 50c, 65c and 75c |        |
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Designed to give uniform stress conditions throughout entire body of lever. Levers are drilled from templets and exact spacing between holes is thus assured.

Drop forging makes all levers uniform.

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### CURRENT AVERAGE TESTS

*For 12 Months*

#### 910 Consecutive Heats

|         | Tensile Strength<br>Lbs. per sq. in. | Yield Point<br>Lbs. per sq. in. | Elong. %<br>in 2 in. |
|---------|--------------------------------------|---------------------------------|----------------------|
| HIGH    | 61370                                | 40420                           | 28.1                 |
| LOW     | 56490                                | 37210                           | 22.6                 |
| AVERAGE | 58344                                | 38494                           | 25.9                 |

*This Trade-mark is your security on  
Railroad Car Castings*

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PITTSBURGH, PA.

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Locomotives built 12 or more years ago cannot economically handle the tonnage at the speeds required today.

MODERN LOCOMOTIVES will do this and more. They will show savings in repair and operating costs which will often pay for the new locomotives within a few years. They will help to increase railroad earnings.

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ONE of the most important factors that increase locomotive effectiveness is The Locomotive Booster.

A simple, two-cylinder steam engine applied to the tender or the trailer truck, the Booster gives that added tractive power which enables a locomotive to start a lon-

ger train with increased tonnage and haul it over the ruling grade.

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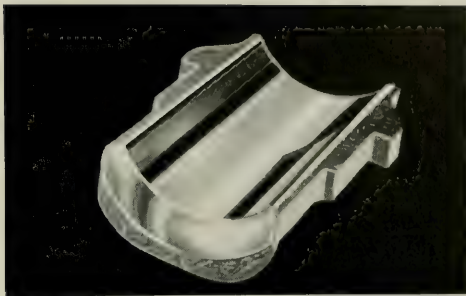
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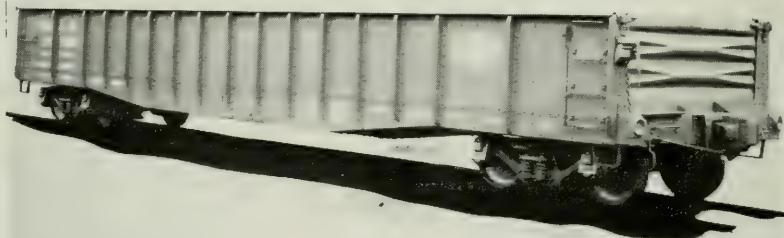
| KOPPERS PRODUCTS<br>AND WHERE THEY APPLY<br>IN THE<br>RAILROAD FIELD | TREATED<br>TIMBER,<br>TIES, POSTS,<br>ETC. | ROOFING<br>MATERIALS | PISTON<br>RINGS | COAL | WATER-<br>PROOFING<br>MATERIALS | BITUMINOUS<br>PAINTS | TARMAC<br>ROAD<br>MATERIALS | FAST'S<br>COUPLINGS | CREOSOTE | CYLINDER<br>AND VALVE<br>PACKING | WEED<br>KILLERS | INSECTI-<br>CIDES<br>AND<br>DISINFEC-<br>TANTS | PLATE<br>WORK | CAR<br>FERRIES,<br>RAILROAD<br>BARGES,<br>ETC. |
|----------------------------------------------------------------------|--------------------------------------------|----------------------|-----------------|------|---------------------------------|----------------------|-----------------------------|---------------------|----------|----------------------------------|-----------------|------------------------------------------------|---------------|------------------------------------------------|
| ROADBEDS                                                             | A                                          |                      |                 |      |                                 |                      |                             |                     | D        |                                  | F               |                                                |               |                                                |
| LOCOMOTIVES                                                          |                                            |                      | C               | B    |                                 | D                    |                             |                     |          | C                                |                 |                                                |               |                                                |
| STATIONS                                                             | A                                          | D                    |                 | B    | D                               | D                    |                             |                     | D        |                                  |                 | F                                              |               |                                                |
| SHOPS                                                                | A                                          | D                    | C               | B    | D                               | D                    |                             | E                   | D        |                                  |                 | F                                              | E&G           |                                                |
| BRIDGES                                                              | A                                          |                      |                 |      | D                               | D                    | D                           |                     | D        |                                  |                 |                                                | E&G           |                                                |
| TUNNELS                                                              | A                                          |                      |                 |      | D                               | D                    | D                           |                     |          |                                  |                 |                                                | E&G           |                                                |
| DRIVEWAYS                                                            | A                                          |                      |                 |      | D                               |                      | D                           |                     |          |                                  | F               |                                                |               |                                                |
| POWER HOUSES                                                         | A                                          | D                    | C               | B    | D                               | D                    |                             | E                   | D        | C                                |                 |                                                | E&G           |                                                |
| STRUCTURAL                                                           | A                                          | D                    |                 |      | D                               | D                    |                             |                     | D        |                                  |                 |                                                | E&G           |                                                |
| GRADE CROSSINGS                                                      | A                                          |                      |                 |      |                                 |                      | D                           |                     |          |                                  |                 |                                                |               |                                                |
| CATTLE PENS                                                          | A                                          | D                    |                 |      | D                               | D                    |                             |                     | D        |                                  |                 | F                                              |               |                                                |
| RAILROAD MARINE<br>OPERATIONS                                        | A                                          | D                    | C               | B    | D                               | D                    |                             |                     | D        | C                                |                 | F                                              | E&G           | H                                              |

A—The Wood Preserving Corporation, Pittsburgh, Pa. B—The Koppers Coal Company, Pittsburgh, Pa. C—American Hammered Piston Ring Division, Baltimore, Md. D—Tar and Chemical Division, Pittsburgh, Pa. E—Berlitz Hayward Division, Baltimore, Md. F—The White Tar Company of New Jersey, Inc. G—Western Gas Division, Fort Wayne, Ind. H—The Maryland Drydock Company, Baltimore, Md.



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19

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Title.....

Company.....

My Address.....

Recommended by.....



OFFICIAL PROCEEDINGS  
OF  
**The Railway Club of Pittsburgh**

Organized October 18, 1901

Vol. XXXVII.  
No. 3.

**Pittsburgh, Pa., Jan. 27, 1938.**

\$1.00 Per Year  
25c Per Copy

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 C. W. TRUST, Asst. Traffic Mgr., U. S. Steel Corporation Subsidiaries, Pittsburgh, Pa.

## PAST PRESIDENTS:

|                        |                                  |
|------------------------|----------------------------------|
| *J. H. McCONNELL.....  | October, 1901, to October, 1903  |
| *L. H. TURNER.....     | November, 1903, to October, 1905 |
| *F. H. STARK.....      | November, 1905, to October, 1907 |
| *H. W. WATTS.....      | November, 1907, to April, 1908   |
| *D. J. REDDING.....    | November, 1908, to October, 1910 |
| *F. R. McFEATTERS..... | November, 1910, to October, 1912 |
| *A. G. MITCHELL.....   | November, 1912, to October, 1914 |
| *F. M. McNULTY.....    | November, 1914, to October, 1916 |
| *J. G. CODE.....       | November, 1916, to October, 1917 |
| *D. M. HOWE.....       | November, 1917, to October, 1918 |
| *J. A. SPIELMAN.....   | November, 1918, to October, 1919 |
| H. H. MAXFIELD.....    | November, 1919, to October, 1920 |
| FRANK J. LANAHAN.....  | November, 1920, to October, 1921 |
| *SAMUEL LYNN.....      | November, 1921, to October, 1922 |
| *D. F. CRAWFORD.....   | November, 1922, to October, 1923 |
| *GEO. D. OGDEN.....    | November, 1923, to October, 1924 |
| A. STUCKI.....         | November, 1924, to October, 1925 |
| F. G. MINNICK.....     | November, 1925, to October, 1926 |
| G. W. WILDIN.....      | November, 1926, to October, 1927 |
| E. J. DEVANS.....      | November, 1927, to October, 1928 |
| W. S. McABEE.....      | November, 1928, to October, 1929 |
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| LOUIS E. ENDSLEY.....  | November, 1930, to October, 1931 |
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| C. O. DAMBACH.....     | November, 1933, to October, 1934 |
| R. H. FLINN.....       | November, 1934, to October, 1935 |
| R. P. FORSBERG.....    | November, 1935, to October, 1936 |
| E. A. RAUSCHART.....   | November, 1936, to October, 1937 |

\*—Deceased.

Meetings held fourth Thursday of each month except June, July and August.

# PROCEEDINGS OF MEETING

JANUARY 27, 1938

The meeting was called to order at the Fort Pitt Hotel at 8 o'clock P. M., with President G. M. Sixsmith in the chair.

Registered attendance 406 as follows:

## MEMBERS

|                     |                         |
|---------------------|-------------------------|
| Adams, Frank W.     | Burnette, G. H.         |
| Ainsworth, John R.  | Buzzerd, J. P.          |
| Aivalotis, John     | Byrne, W. L.            |
| Ambrose, W. F.      | Cannon, John S.         |
| Ames, L.            | Carey, C. D.            |
| Anderegg, George W. | Carmody, J. J.          |
| Anderson, Burt T.   | Carter, E. D.           |
| Angel, A. J.        | Cavanaugh, T. J.        |
| Aulbach, A. J.      | Chaffin, H. B.          |
| Babcock, F. H.      | Christy, F. X.          |
| Baer, Harry L.      | Cipro, Thomas           |
| Bagaley, W. W.      | Clowes, W. K.           |
| Baker, W. E.        | Condon, William H., Jr. |
| Balla, J. A.        | Conway, J. D.           |
| Balph, M. Z.        | Coombe, A. B.           |
| Balzer, C. E.       | Courtney, H.            |
| Barr, H. C.         | Crawford, A. B.         |
| Barrie, James S.    | Crawford, Burt H.       |
| Baughman, G. W.     | Creighton, D. M.        |
| Beall, C. R.        | Cudworth, H. D.         |
| Beitsch, George F.  | Dalzell, W. E.          |
| Beltz, J. D.        | Dambach, C. O.          |
| Bender, H. P.       | Danforth, G. H.         |
| Berg, Karl          | Daugherty, W. A.        |
| Berg, Max           | Davidson, J. C.         |
| Berghane, A. L.     | Davis, Charles S.       |
| Best, D. A.         | Dunham, C. W.           |
| Blyth, F. G.        | Dean, R. W.             |
| Borst, D. R.        | Dean, W. A.             |
| Boyd, John R.       | Dickinson, B. F.        |
| Boyd, John B., Jr.  | Dickson, K. B.          |
| Boyen, W. W.        | Dihle, J. E.            |
| Britt, T. E.        | Dixon, C. P.            |
| Brown, E. F.        | Dixon, J. M.            |
| Bryant, Jess H.     | Edsall, E. D.           |
| Bryant, L. J.       | Edwards, Walter         |
| Buchanan, C. C.     | Ely, J. L.              |
| Buckley, William    | Emery, E.               |
| Buffington, W. P.   | Evans, David F.         |
| Burel, W. C.        | Failor, Charles W.      |

Fair, J. M.  
 Farlow, G. B.  
 Ferguson, George  
 Flynn, F. E.  
 Forsythe, George B.  
 Frauenheim, Pierce  
 Fulkerson, A. F.  
 Ganz, C. A.  
 Geertz, Allan O.  
 Geiser, W. P.  
 George, W. J.  
 Gilg, Henry F.  
 Glaser, J. P.  
 Gleeson, H. L.  
 Goda, P. H.  
 Goodlin, C. L.  
 Goodwin, A. E.  
 Gorman, A. T.  
 Gray, T. H.  
 Grieve, Robert E.  
 Grove, C. G.  
 Guinnip, M. S.  
 Hagan, Harry F.  
 Haller, Nelson M.  
 Hamilton, R. F.  
 Hammer, C. F.  
 Hancock, Milton L.  
 Hansen, William C.  
 Harris, John P.  
 Harris, William S.  
 Haupt, H. H.  
 Hayward, Carlton  
 Hellriegel, W. H.  
 Hengst, Guy E.  
 Henry, C. J.  
 Hepburn, P. W.  
 Hess, Charles A.  
 Hicks, E. S., Jr.  
 Hilstrom, A. V.  
 Holbrook, E. L.  
 Huber, H. G.  
 Hunt, L.  
 Hykes, W. H.  
 Jados, Walter T.  
 Jakovac, Victor  
 Jarres, F. A.  
 Johnson, Ira S.  
 Johnson, J. W.  
 Jones, R. E.  
 Kaup, H. E.  
 Kellenberger, K. E.

Kemmerer, R. R.  
 Kentlein, John  
 King, George A. H.  
 Kroske, J. F.  
 Kuhnert, P. C.  
 Kusick, Harry F.  
 Lanahan, J. S.  
 Larson, W. E.  
 Layng, F. R.  
 Lewis, N. F.  
 Long, R. M.  
 Longdon, C. V.  
 Lundeen, C. J.  
 Lytle, L. J.  
 Malone, Frank B.  
 Masterman, T. W.  
 Masters, W. C.  
 Matuzeski, R. R.  
 Mayer, L. I.  
 Millar, C. W.  
 Miller, Henry  
 Miller J. B.  
 Miller, John  
 Misner, George W.  
 Mitchell, W. S.  
 Molyneaux, Dawes S.  
 Monk, Thomas J.  
 Morgan, Homer C.  
 Morrison, R. A. J.  
 Murray, S.  
 McCormick, E. S.  
 McCuen, J. T.  
 McCully, D. L.  
 McFetridge, W. S.  
 McHail, J. L.  
 McIntyre, R. C.  
 McKinley, John T.  
 McKinstry, C. H.  
 McNamee, W.  
 McPherson, A. R.  
 Nagel, James  
 Nichols, Samuel A.  
 Nies, E. L.  
 Noble, J. A.  
 Noonan, Daniel  
 Ord, George H.  
 O'Reilly, G. Arthur  
 Osborne, Raymond S.  
 Overholt, B. C.  
 Oyen, F.  
 Paisley, F. R.



Parvin, C. F.  
 Pringle, Paul V.  
 Purchard, Paul  
 Ramsey, A. Milne  
 Rau, W. R., Jr.  
 Reagan, Henry V.  
 Rebstock, J. B.  
 Reifsnnyder, J. W.  
 Renshaw, W. B.  
 Riddle, F. L.  
 Rupp, E. S.  
 Rutter, H. E.  
 Rushneck, G. L.  
 Ryan, D. W.  
 Sarchet, Roger  
 Schako, E. J.  
 Schaller, A. J.  
 Schane, Frank A.  
 Schiller, John  
 Searles, E. J.  
 Sekera, C. J.  
 Sennstrom, Harold R.  
 Severn, A. B.  
 Shellenbarger, H. M.  
 Sheridan, T. F.  
 Shields, J. T.  
 Shingledecker, J. C.  
 Shuster, W. W.  
 Sixsmith, G. M.  
 Smith, Robert B.  
 Snyder, F. I.  
 Staats, Kenneth A.  
 Stack, John E.  
 Stamm, Bruce B.  
 Stamm, J. Duncan  
 Steiner, P. E.  
 Stevens, L. V.  
 Stevenson, R. F.

Zell, H. A.

#### VISITORS

Allison, J. R.  
 Anderson, R. S.  
 Angel, J. F.  
 Angermann, J. C.  
 Ashcroft, R. W.  
 Bagaley, Robert F.  
 Baker, C. H.  
 Balzer, Charles, Jr.  
 Barr, James C.

Stevenson, W. M.  
 Stewart, J. C.  
 Stoffregen, Louis E.  
 Stype, W. G.  
 Sudell, D. W.  
 Sutherland, Lloyd  
 Swope, B. M.  
 Sykes, A. H.  
 Taylor, H. D.  
 Ternent, H. J.  
 Teskey, Dr. W. J.  
 Thomas, George P.  
 Thomas, Theo.  
 Thornton, A. W.  
 Tracey, J. B. A.  
 Trautman, H. J.  
 Tryon, I. D.  
 Tyler, B. W.  
 Unger, Dr. J. S.  
 Urtel, E. J.  
 Utzler, Elmer S.  
 Van Horne, C. F.  
 Vollmer, Karl L.  
 Wallace, O. T.  
 Walter, E. R.  
 Welton, A. A.  
 West, Troy  
 Westerman, M. A.  
 Wheeler, C. M.  
 Wilson, James R.  
 Wilson, Walter H.  
 Winslow, G. W.  
 Winton, C. A.  
 Woodings, Robert T.  
 Woodward, R. P.  
 Woollen, A. H.  
 Yarnall, Jesse  
 Yohe, J. K., Jr.

Benhoff, H. E.  
 Berger, John S.  
 Berkens, H.  
 Bevan, Oscar G. E.  
 Bortz, J. M.  
 Bouchat, Louis J.  
 Boyd, John B.  
 Breisacher, William G.  
 Bridges, R. S.

|                       |                     |
|-----------------------|---------------------|
| Brown, A. W.          | Kendall, W. H.      |
| Brown, Homer          | Ketterer, C. L.     |
| Brown, Paul           | Ketterer, Ralph     |
| Brown, Robert S.      | Klingensmith, W. S. |
| Bruce, L. C.          | Knoff, D. R.        |
| Campbell, J. Leo      | Koch, Edward J.     |
| Carpenter, F. R.      | Kramer, J. K.       |
| Chandler, J. F.       | Lamborn, Samuel W.  |
| Clowes, Robert F.     | Lasko, Andy         |
| Colvin, William H.    | Ledwith, A. B.      |
| Crago, P. H.          | Lewis, S. B.        |
| Cullison, J. A.       | Lindsay, F. R.      |
| Cupp, C. J.           | Lindsay, H. S.      |
| Currie, F. M.         | Mapp, E. J.         |
| Davis, G. C.          | Martin, Hugh J.     |
| Davis, R. E.          | Mechling, R. B.     |
| Davis, William B.     | Molyneaux, L. S.    |
| De Venzio, V. F.      | Morgan, G. L.       |
| Donmeyer, C. K.       | Murphy, D. L.       |
| Dunham, Paul W.       | McCann, Daniel J.   |
| Dunn, J. H.           | McDowell, R. L.     |
| Dyer, J. W.           | McGall, William     |
| Dyer, John K.         | McKinley, L. C.     |
| Echoes, J. E.         | McKinnon, H. D.     |
| Eisele, H. G.         | McKinstry, Clair M. |
| Engel, H. A.          | McVicker, J. W.     |
| Farbocher, J.         | Nagel, James, Jr.   |
| Fisher, Richard E.    | Netherland, B. M.   |
| Fletcher, B. J.       | Newburn, S. H.      |
| Gilmore, Robert A.    | Nichols, J. W.      |
| Gray, George R.       | Nieseman, F.        |
| Grondahl, L. O.       | Nordberg, C. R.     |
| Gross, M. A.          | Noss, F. C.         |
| Gumz, Fred A.         | Overholt, Edward    |
| Hagedorn, R. J.       | Parfitt, W. W.      |
| Harley, W. S.         | Parker, William     |
| Hastings, W. S.       | Pennington, Fred W. |
| Hautman, Hugo         | Peterson, W. C.     |
| Heinitsh, G. M.       | Pitner, R. D.       |
| Helick, R. H.         | Reagan, P. H.       |
| Henderson, M. O.      | Reynolds, D. E.     |
| Henderson, Reed R.    | Robinson, H. J.     |
| Hill, Lewis L.        | Rosenthal, J. H.    |
| Hill, W. H. J.        | Rowe, C. E.         |
| Hoover, William W.    | Rupp, Jack          |
| Hopkins, J. W.        | Sheparson, A.       |
| Houlihan, Charles F.  | Sixsmith, James     |
| Irwin, Thomas A.      | Smith, Mose         |
| Irwin, Mrs. Thomas A. | Somerside, C. A.    |
| Kacy, R. A.           | Stanley, J. P.      |
| Kelly, T. A.          | Stouffer, C. D.     |

Steadling, Albert  
Stradling, A. C., Sr.  
Street, Clayton K.  
Talbert, John F.  
Thomas, Edgar O.  
Thomas, George P., Jr.  
Thomas, M. F.  
Tryon, I. I.  
Tryon, Mrs. Miriam  
Uline, C. S.  
Urban, C. E.  
Vandivort, R. E.  
Van Horn, J. J.

Vollmer, Paul F.  
Wallace, H. A.  
Weigand, W. J.  
Weil, H. M.  
Weyman, Frank  
Williams, C. B.  
Williams, H. O.  
Williams, W. S.  
Wilson, L. E.  
Wingo, P. C.  
Winkelman, F. E.  
Wolff, D. A.  
Wolff, W. C.

Yard, John S.

PRESIDENT: Gentlemen, may I have your attention for a moment, please? We are going to be entertained for a few moments, while our people are assembling for the regular program, by the Grenadiers Quartette of the National Broadcasting Company and KDKA. I now take pleasure in presenting to you the Grenadiers Quartette.

(The quartette rendered several songs which were received with enthusiastic applause, after which an encore was given).

PRESIDENT: As I previously announced, the entertainment you have just listened to was by the Grenadiers Quartette of KDKA and I desire to thank those young men on behalf of the Railway Club for this splendid presentation which they have rendered.

Now if we are less comfortable tonight, or if conditions under which this meeting is being held are less satisfactory, we sincerely regret the inconvenience. In order that you may understand the situation, I want to say that it is due to just one of those things that happen occasionally through misunderstanding. There was a misunderstanding between our people and the Hotel Management, and as a result we are quartered here for this one evening instead of the usual English Room which had been made unavailable for this occasion. However, you will be glad to know that for all of our succeeding meetings this year the English Room has been assigned to us and there should be no further inconvenience on that account.

We have had provided quite a program for this evening and in order that you may understand what is before us the main portion of this meeting will consume approximately an

hour and a quarter. Therefore, in order that we may get along and because of the low ceiling, large crowd and resultant atmospheric conditions (Laughter), we will proceed as fast as possible with the preliminaries. The roll call will be dispensed with because, as you know, registrations have been taken at the door. Likewise, the minutes of the preceding meeting will not be read because they are already in printed form and distributed to the membership.

Mr. Secretary, are there any new proposals?

**SECRETARY:** We have the following proposals for membership:

- Adair, V. D., Tester, Westinghouse Air Brake Company, Box 193, Wilmerding, Pa. Recommended by N. F. Lewis.
- Bierman, William, Assistant to President, Pullman-Standard Car Manufacturing Company, Gulf Building, Pittsburgh, Pa. Recommended by W. B. Moir.
- Borst, Douglas R., Test Engineer, Westinghouse Air Brake Company, 515 Third Street, Pitcairn, Pa. Recommended by N. F. Lewis.
- Cannon, John G., Jr., Special Apprentice, Westinghouse Air Brake Company, 353 Marguerite Avenue, Wilmerding, Pa. Recommended by N. F. Lewis.
- Davis, C. L., Engineman, Pennsylvania Railroad, 6510 Frankstown Avenue, Pittsburgh, Pa. Recommended by Lloyd Sutherland.
- Flynn, Francis E., Track Supervisor, Pennsylvania Railroad, 224 Allegheny Avenue, Kittanning, Pa. Recommended by G. M. Sixsmith.
- Garland, C. A., Inspector, Bureau of Explosives, 4925 Friendship Avenue, Pittsburgh, Pa. Recommended by W. B. Moir.
- Goodlin, Carl L., Electrical Engineer, Union Switch & Signal Company, Emerson Street, Penn Township, Wilkinsburg, Pa. Recommended by E. S. McCormick.
- Hahn, G. J., Special Sales Representative, Carnegie-Illinois Steel Corporation, Frick Building, Pittsburgh, Pa. Recommended by Harry L. Gleeson.
- Hammer, Charles F., Engineer of Tests, Westinghouse Air Brake Company, 322 Eicher Avenue, Greensburg, Pa. Recommended by N. F. Lewis.
- Harris, William S., Representative, Nathan Manufacturing Company, 40 Bissell Avenue, Buffalo, N. Y. Recommended by Lloyd Sutherland.
- Hicks, E. S., Jr., Salesman, Southern Wood Preserving Company, Dollar Savings & Trust Building, Pittsburgh, Pa. Recommended by A. J. Angel.
- McCarty, James G., Representative, Streeter Amet Company, 329 Fetzner Street, Mt. Washington, Pittsburgh, Pa. Recommended by Harry L. Gleeson.
- Oyen, Finn, Engineer, Subsidiary Manufacturing Companies of U. S. Steel Corporation, 612 Frick Building, Pittsburgh, Pa. Recommended by W. B. Moir.
- Pollock, Michael C., Vice President, The Cooper Bessemer Corporation, Grove City, Pa. Recommended by W. S. McAbee.
- Ramsey, A. Milne, District Manager, Le Carbone Company, P. O. Box 8002, Pittsburgh (16), Pa. Recommended by Kenneth A. Staats.
- Stamm, J. Duncan, Draftsman, Carnegie-Illinois Steel Corporation, Carnegie Building, Pittsburgh, Pa. Recommended by W. B. Moir.
- Zell, Harry A., Traffic Manager, Edgewater Steel Company, P. O. Box 478, Pittsburgh, Pa. Recommended by W. B. Moir.

I think it makes about eighteen proposals.

**PRESIDENT:** These proposals for membership will be referred to the Executive Committee in accordance with the usual procedure and requirements. If any of the gentlemen who have just been proposed for membership are here tonight, I would like to say that we might anticipate favorable action on the part of the Executive Committee and take advantage of this opportunity to welcome them as members of



this Club. I am sure they will find their connection with us well worth while. Likewise, on behalf of the Railway Club of Pittsburgh, may I extend a greeting to any guests who may be present tonight. As you know we are always glad to have guests attend our meetings and hope such of you as care to will come back again at some future time. Any of you who may wish to make application for membership in the Club will, I can assure you, have such applications received and acted on with pleasure.

We now come to the big moment so far as this meeting is concerned. I think I can safely say, and I feel sure you will agree with me later in the evening, that we have been very fortunate in securing the presentation we are going to listen to and look at for the next hour or more. Therefore, it is with considerable pleasure that I present to you Mr. Charles F. Goodrich, Chief Engineer of the American Bridge Company of Pittsburgh. Mr. Goodrich.

MR. GOODRICH: Mr. President and members of the Railway Club of Pittsburgh. I am greatly honored by such a large audience as I see before me and I am just wondering, considering all these names of new men proposed for membership, if there is anybody left in Pittsburgh who is not a member of this Club, except yours truly, and perhaps I had better hurry up and get in my application or I will be too late. (Amid applause Secretary Conway presented Mr. Goodrich with application form).

I see you have a very wise and able Secretary who is quick on the trigger.

## **SAN FRANCISCO-OAKLAND BAY BRIDGE**

By **CHARLES F. GOODRICH**, Chief Engineer, American Bridge Company, Pittsburgh, Pa.

Doubtless many of you read accounts in the newspapers of a year ago and saw rotogravure pictures relating to the dedication and opening to traffic of the World's Greatest Bridge. A bridge which many have prophesied will remain the greatest for 100 years or more.

Across San Francisco Bay, connecting the city of San Francisco with the cities of Oakland, Berkeley and Alameda, this bridge was dedicated on November 12, 13 and 14, 1936,

with fitting ceremonies and attended by some 400,000 people from all over the United States.

It is my privilege to present a moving picture of some of the interesting features of the actual construction of this great bridge, particularly the superstructure. There are, however, several extraordinary facts connected with the bridge to which I would like to call your attention.

It crosses the longest stretch of major navigable water yet spanned. It is nearly three times as long as the Firth of Fourth Bridge in Scotland, which ranks next to it in length.

Some of the piers, built by a new cellular caisson method, were carried to a greater depth than ever before; one to a depth of 242 feet below low tide; another, with horizontal dimensions of 92 feet by 197 feet, is 498 feet high, bed rock to its top, or the height of a 40-story office building. It contains 165,000 cubic yards of concrete, more than was used in the Empire State Building in New York.

The construction of the bridge required enough timber to build houses for a town of 15,000 people.

The bridge is divided into two parts by Yerba Buena Island, through which the double deck roadway passes by means of a 540-foot long tunnel, which has the largest bore of any tunnel in the world, 65 ft. 6 ins. by 52 ft. 8 ins.

The channel to the west of Yerba Buena is crossed by a pair of twin suspension bridges, placed end to end, with a common central anchorage pier between them—the only twin suspension bridge, of any size, in the world. The central spans of these suspension bridges, 2310 feet long, rank third in length in the world, while the side spans, 1160 feet long, are longer than those of any other bridge.

There are 71,000 miles of wire in the cables of the suspension bridges, or enough to reach three-tenths of the distance from the earth to the moon.

The cantilever structure, just east of Yerba Buena, with its central span of 1400 feet is the longest and heaviest in the United States and ranks third in the world.

This bridge exceeds all other bridges in cost, \$78,000,000. It was constructed in a remarkably short time. Construction work began in May, 1933, and the bridge was opened for traffic November 12-14, 1936. The bridge proper, the approaches, and terminal facilities were built by the Department

of Public Works of the State of California for the California Toll Bridge Authority. The design was prepared by the Department of Public Works.

The two contracts for the superstructure were awarded in March, 1933, to Columbia Steel Company, Pacific Coast representatives of the other Subsidiaries of United States Steel Corporation. These contracts were assigned to American Bridge Company for fabrication and construction. The contract price was \$23,600,000. In this superstructure there are 150,000 tons of steel, including 19,000 tons of cable wire and 6,000 tons of steel reinforcing in the concrete paving.

Nearly all the Subsidiaries of the United States Steel Corporation participated in furnishing material for this bridge. Carnegie-Illinois Steel Corporation and Tennessee Coal, Iron & Railroad Company furnished structural shapes and plates. American Steel & Wire Company furnished the cable wire, wire rope and sockets; Cyclone Fence Company the wire mesh fencing used for the catwalks; Federal Shipbuilding and Dry Dock Company the cast steel saddles, and National Tube Company the pipe for railings. Columbia Steel Company, Pacific Coast Distributor of Subsidiary products, negotiated the general contract and furnished wire rope and other fittings.

Cable wire, wire rope and fittings, manufactured at American Steel & Wire Company plants at Trenton, N. J., and Worcester, Mass., were transported to San Francisco in Isthmian Steamship Company's ships.

The structural steel was fabricated at the Ambridge, Pa., and Gary, Ind., plants of the American Bridge Company. It was erected and cables spun by the field forces of American Bridge Company. Erection procedures were designed by the office forces of that Company and working drawings prepared by that Company's drafting force.

I am not going to describe this celebration to you, nor am I going to present a technical paper describing the many engineering problems and difficulties connected with the building of the bridge. But I am going to take you on a journey to California and show you by word and picture how this great bridge was built, indicate by a map or two why and where it was built, recite a bit of history which tells of those early men who dreamed of such a bridge, of those men of vision who promoted it, of those men of science who



planned it, and lastly of those men of action who built it. For all four are needed for such an enterprise.

Very few people living east of the Mississippi River knew very much about the state of California previous to the year 1848 when gold was discovered there, but in the few years that followed, it became the Mecca for thousands who yielded to the lure of the precious yellow metal, and San Francisco became a city almost overnight as an outfitting place for those bound for the mines.

The first step from San Francisco to the gold mines in the Sierras was the crossing of the wide bay to its eastern shore and boats were extremely scarce. So began the earliest dreams of the bridge which has just become a reality. These dreams are epitomized by the following bit of history, which, though it seems rather whimsical, is true.

Among the gold seekers of '49 there came to San Francisco a shrewd and likable fellow by the name of Joshua A. Norton. He attained considerable importance and amassed a fortune, which he later lost in speculation. His mind became unbalanced, and he disappeared for a time. Upon his return several years later, he assumed the title of "Emperor of the United States and Protector of Mexico." Norton's eccentricities were tolerated with amusement as he went about San Francisco happily engaged in the business of "being Emperor." His friends presented him with uniforms and medals, honored the paper money which he issued, and treated him with pomp and circumstance.

That the many "Imperial" proclamations which Norton issued were entirely ignored, troubled him not at all. The Coast Guard did not blockade Carquinez Strait when so ordered, nor did Lincoln and Davis respond to his invitation to a meeting for the purpose of arbitrating the Civil War.

We wonder what might be the thoughts of "Emperor" Norton could he see the two mighty bridges stretching from San Francisco to the east and north and recall to mind the "Proclamation" which he signed August 18, 1869.

### **"PROCLAMATION"**

We, Norton I, Emperor of the United States and Protector of Mexico, do order and direct — that a suspension bridge be constructed from the improvements lately ordered by our royal decree at Oakland Point to Yerba Buena, from



thence to the mountain range of Sancilleto — Whereof fail not under penalty of death.

Given under our hand this 18th day of August, A.D., 1869, and in the 17th year of our reign, in our present Capitol, the city of Oakland.

Norton I, Emperor.

---

The development of the project through the early visionary stage, the promotional stage, in the middle twenties, by private enterprise under charter for a toll bridge to be granted by the state, and through the first stage of planning, designing, and legislation which enabled the State of California to build and operate toll bridges and to borrow money for this project from the Reconstruction Finance Corporation, has been amply described by members of the engineering staff of the San Francisco-Oakland Bay Bridge Division of the Department of Public Works, in articles in Civil Engineering and Engineering News-Record.

The United States Steel Corporation takes pleasure in presenting to you the moving picture of the construction of the San Francisco-Oakland Bay Bridge.

## DISCUSSION

QUESTION: What was the man's head doing there?

MR. GOODRICH: Of course all these men were equipped with fiber helmets on the job to protect them from falling bolts, nuts, and so forth. He was standing there with his head out just watching operations.

QUESTION: Why did they not make both sections suspension type; why did they make one cantilever and the other part suspension?

MR. GOODRICH: Because the bed of solid rock at the bottom on the East Bay was far too low to attempt to reach it by any known method of sinking foundations, and you have to have rock for the anchorage of every suspension bridge. It is not possible to establish a suspension bridge anchorage on hard pan or anything softer than solid rock.

QUESTION: How many were hurt in the construction work on the bridge?

MR. GOODRICH: The gentleman asks how many men

were hurt in the construction work on the bridge. I do not know how many were hurt, but twenty-two lost their lives, all told, either on the foundations or diving. One man lost his life diving. There were one hundred fifty thousand tons of steel used in this construction. Twenty-two casualties reckoned on that amount of tonnage was a rather small percentage of loss, as we reckon casualties by the amount of material used.

QUESTION: Does the catwalk cable support the main cable while being spun?

MR. GOODRICH: No, the catwalk does not support the main cable at all. It is held by the four two and one-quarter inch ropes and the catwalk is swung there just high enough so that the men can work on the cables. Later on the catwalk was taken down entirely and cut up for use elsewhere.

QUESTION: Is there a known tension on each one of the wires when it is spun?

MR. GOODRICH: The gentleman asks if we put a known tension on each one of the wires when it is spun. Yes, that is true. The tension comes from the weight of the wire itself as it is spun. The relation between the sag from the top of the towers to the lower point of the wire as it is spun and the weight of the wire kept in tension are the factors of the well-known formula by which you can determine the stress on the wire.

QUESTION: Is the suspension type of bridge cheaper for the same total length?

MR. GOODRICH: The gentleman asks if the suspension type of bridge would be cheaper for equivalent length of spans. That is rather a difficult question to answer off hand because the economy depends on the depth of the water, the substructure under the water and the length and width of the channel that is to be provided for navigation. If it would have been possible to duplicate the drawings and the fabrication could have been similar or the same for the various members it would have been cheaper to put a suspension bridge on the East side; provided the general foundation conditions were similar and also provided it was necessary to use as wide a channel. But navigation on the East

Bay is comparatively light, only some small boats going to Oakland, so it was not necessary to provide the wide channels there and, therefore, the short spans were cheaper.

(Various pictures shown by projection machine followed by sound moving pictures illustrating the construction and operation in building the bridge).

MR. GOODRICH: That finishes the film and I wish to thank you for your kind attention.

(Applause).

PRESIDENT: I think you will now agree with what I said previously that we were very fortunate in having Mr. Goodrich with us and that after tonight the San Francisco-Oakland Bay Bridge is more than just a name to many of us. I think we should give adequate expression of our appreciation to Mr. Goodrich for his splendid presentation orally and through pictures of that remarkable venture in the far West. I am not going to attempt putting that suggestion into words, but instead I am going to ask Mr. H. H. Haupt, General Superintendent Motive Power of the Pennsylvania Railroad Company, and Chairman of your Subject Committee, who, by the way, is largely responsible for Mr. Goodrich being here tonight, if he will not take over that pleasant task for us. Mr. Haupt.

MR. HAUPT: Mr. President and fellow members of the Railway Club. It is indeed a great personal satisfaction to me, as Chairman of your Subject Committee, to have been instrumental in securing for you such an entertaining, instructive and well delivered program. It is also gratifying to have such a large attendance and I trust satisfying to Mr. Goodrich. I must say that the unusually large attendance tonight is rather surprising to me. I hope that in the future our programs that we present to you will be as deeply instructive to you as this program has been that we have listened to here tonight. I want to thank, Mr. Goodrich personally and on behalf of the Railway Club of Pittsburgh, for coming to our Club meeting and delivering his subject in such a masterful way. We thank you and I move that we give Mr. Goodrich a rising vote of thanks.

(A rising vote of thanks was given to Mr. Goodrich by the membership).

MR. GOODRICH: I am going to mention one more thing of interest about this bridge. On a toll bridge of this kind cars, as they cross the bridge, collect static electricity and it is necessary to have, raising from the floor, little fine piano wires to discharge the static electricity from the cars; otherwise, as you reach out to pay your fare, the toll keeper gets a little shock each time and could only stand a few minutes of that sort of thing. Each car has to be discharged of its static electricity in exactly the same way oil company trucks discharge electricity by dragging a chain as a safeguard against explosion.

There being no further discussion, ON MOTION the meeting was adjourned with the announcement that lunch was ready for serving in the Norse Room downstairs.

J. D. CONWAY, Secretary.





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Vol. XXXVII.

FEBRUARY 24, 1938.

No. 4.

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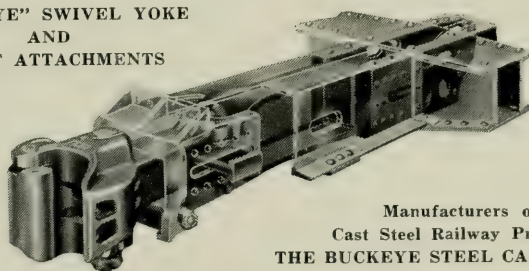


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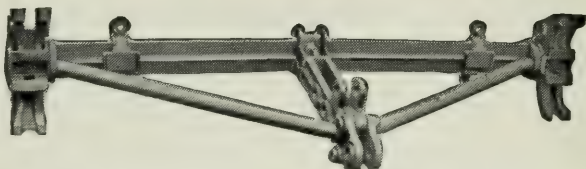
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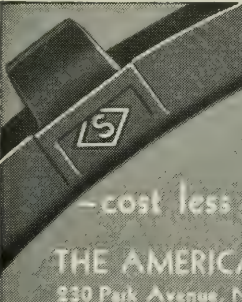
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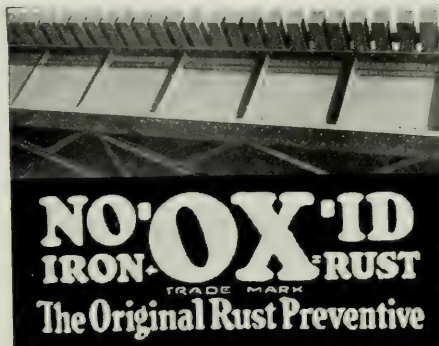


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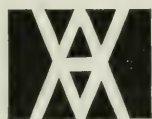
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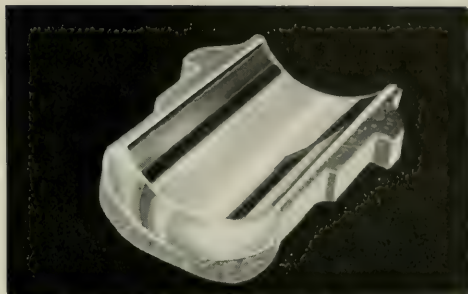
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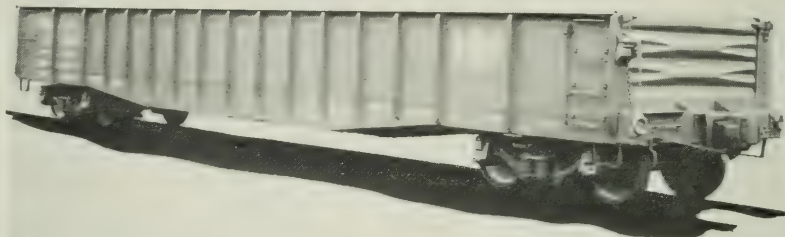
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|----------------------------------------------------------------------|--------------------------------------------|----------------------|-----------------|------|---------------------------------|----------------------|-----------------------------|---------------------|----------|----------------------------------|-----------------|------------------------------------------------|---------------|------------------------------------------------|
| ROADBEDS                                                             | A                                          |                      |                 |      |                                 |                      |                             |                     | D        |                                  | F               |                                                |               |                                                |
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| SHOPS                                                                | A                                          | D                    | C               | B    | D                               | D                    |                             | E                   | D        |                                  |                 | F                                              | E&G           |                                                |
| BRIDGES                                                              | A                                          |                      |                 |      | D                               | D                    | D                           |                     | D        |                                  |                 |                                                | E&G           |                                                |
| TUNNELS                                                              | A                                          |                      |                 |      | D                               | D                    | D                           |                     |          |                                  |                 |                                                | E&G           |                                                |
| DRIVEWAYS                                                            | A                                          |                      |                 |      | D                               |                      | D                           |                     |          |                                  | F               |                                                |               |                                                |
| POWER HOUSES                                                         | A                                          | D                    | C               | B    | D                               | D                    |                             | E                   | D        | C                                |                 |                                                | E&G           |                                                |
| STRUCTURAL                                                           | A                                          | D                    |                 |      | D                               | D                    |                             |                     | D        |                                  |                 |                                                | E&G           |                                                |
| GRADE CROSSINGS                                                      | A                                          |                      |                 |      |                                 |                      | D                           |                     |          |                                  |                 |                                                |               |                                                |
| CATTLE PENS                                                          | A                                          | D                    |                 |      | D                               | D                    |                             |                     | D        |                                  |                 | F                                              |               |                                                |
| RAILROAD MARINE<br>OPERATIONS                                        | A                                          | D                    | C               | B    | D                               | D                    |                             |                     | D        | C                                |                 | F                                              | E&G           | H                                              |

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OFFICIAL PROCEEDINGS  
OF  
**The Railway Club of Pittsburgh**

Organized October 18, 1901

Vol. XXXVII.  
No. 4.

**Pittsburgh, Pa., Feb. 24, 1938**

\$1.00 Per Year  
25c Per Copy

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D. C. CARROLL, Assistant Agent, The Pennsylvania Railroad, Pittsburgh, Pa.  
S. G. DOWN, Vice President, Westinghouse Air Brake Company, Wilmerding, Pa.  
HARRY C. GRAHAM, Pittsburgh Screw & Bolt Corporation, Pittsburgh, Pa.  
J. W. SCHAD, Division Master Mechanic, B. & O. R. R. Co., Pittsburgh, Pa.  
A. A. READ, Duquesne Slag Products Company, Pittsburgh, Pa.  
C. P. SCHRECONGOST, Traffic Manager, Hillman Coal & Coke Company, Pittsburgh, Pa.

## ENTERTAINMENT COMMITTEE:

J. PORTER GILLESPIE, Chairman, Asst. Gen. Supt., Lockhart Iron & Steel Co., Pgh., Pa.  
 VINCENT KROEN, Vice Chairman, Supervr., Express Service, Penna. R. R., Pgh., Pa.  
 W. C. BUREL, Master Mechanic, Western Allegheny Railroad, Kaylor, Pa.  
 H. E. CHILCOAT, Gen. Mgr. of Sales, Koppel Div., Pressed Steel Car Co., Inc., Pgh., Pa.  
 F. L. FOSTER, Supt. Freight Transportation, P. & L. E. R. R. Co., Pittsburgh, Pa.  
 J. S. LANAHAN, Vice President, Fort Pitt Malleable Iron Company, Pittsburgh, Pa.  
 JAMES NAGEL, Asst. General Superintendent, Montour Railroad Company, Coraopolis, Pa.

## FINANCE COMMITTEE:

M. A. SMITH, Chairman, General Manager, P. & L. E. R. R. Co., Pittsburgh, Pa.  
 J. B. DIVEN, Superintendent Motive Power, The Pennsylvania Railroad, Pittsburgh, Pa.  
 F. J. RYAN, District Representative, Detroit, Toledo & Ironton Railroad, Pittsburgh, Pa.  
 C. E. CATT, Division Accountant, B. & O. R. R. Co., Pittsburgh, Pa.  
 G. W. HONSBERGER, Transpn. Mgr., Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

## ADVERTISING COMMITTEE:

J. H. JAMES, Chairman, Purchasing Agent, P. & L. E. R. R. Co., Pittsburgh, Pa.  
 J. C. SHINGLEDECKER, Supervisor of Service Stations, The Pennzoil Co., Pittsburgh, Pa.  
 CHARLES M. WHEELER, Sales Engineer, Union Switch & Signal Co., Swissvale, Pa.

## MEMBERSHIP COMMITTEE.

W. B. MOIR, Chairman, Chief Car Inspector, The Pennsylvania Railroad, Pittsburgh, Pa.  
 LLOYD SUTHERLAND, Vice Chair., Gen. Storekeeper, P. & L. E. R. R., McKees Rocks, Pa.  
 T. FITZGERALD, Vice Pres. & Gen. Mgr., Pittsburgh Railways Co., Pittsburgh, Pa.  
 G. C. HARPER, General Superintendent, Montour Railroad Company, Coraopolis, Pa.  
 FRANK A. JARRES, Assistant Storekeeper, B. & O. R. R. Co., Pittsburgh, Pa.  
 C. S. LEET, Assistant General Manager, B. & L. E. R. R. Co., Pittsburgh, Pa.  
 C. R. MEGEE, Dist. Mgr. Car Service Div., Association of American Railroads, Pgh., Pa.  
 R. C. McINTYRE, Supt. Motive Power, Union Railroad Company, East Pittsburgh, Pa.  
 H. C. PRINGLE, Vice Pres. & Supt., Monongahela Connecting R. R. Co., Pittsburgh, Pa.  
 S. B. RILEY, General Superintendent, P. & W. Va. Ry. Co., Pittsburgh, Pa.  
 JOHN B. WRIGHT, Asst. Vice President, Westinghouse Air Brake Co., Wilmerding, Pa.  
 F. H. EATON, Sales Engineer, American Car & Foundry Company, Pittsburgh, Pa.  
 C. W. GOTTSCHALK, Asst. Traffic Manager, Jones & Laughlin Steel Corp., Pgh., Pa.  
 THOMAS R. FITZPATRICK, Freight Traffic Mgr., P. & L. E. R. R. Co., Pittsburgh, Pa.  
 P. W. HEPBURN, Sales Engineer, Gulf Oil Corporation, Pittsburgh, Pa.  
 C. W. TRUST, Asst. Traffic Mgr., U. S. Steel Corporation Subsidiaries, Pittsburgh, Pa.

## PAST PRESIDENTS:

|                        |                                  |
|------------------------|----------------------------------|
| *J. H. McCONNELL.....  | October, 1901, to October, 1903  |
| *L. H. TURNER.....     | November, 1903, to October, 1905 |
| *F. H. STARK.....      | November, 1905, to October, 1907 |
| *H. W. WATTS.....      | November, 1907, to April, 1908   |
| *D. J. REDDING.....    | November, 1908, to October, 1910 |
| *F. R. McFEATHERS..... | November, 1910, to October, 1912 |
| *A. G. MITCHELL.....   | November, 1912, to October, 1914 |
| *F. M. McNULTY.....    | November, 1914, to October, 1916 |
| *J. G. CODE.....       | November, 1916, to October, 1917 |
| *D. M. HOWE.....       | November, 1917, to October, 1918 |
| *J. A. SPIELMAN.....   | November, 1918, to October, 1919 |
| H. H. MAXFIELD.....    | November, 1919, to October, 1920 |
| FRANK J. LANAHAN.....  | November, 1920, to October, 1921 |
| *SAMUEL LYNN.....      | November, 1921, to October, 1922 |
| *D. F. CRAWFORD.....   | November, 1922, to October, 1923 |
| *GEO. D. OGDEN.....    | November, 1923, to October, 1924 |
| A. STUCKI.....         | November, 1924, to October, 1925 |
| F. G. MINNICK.....     | November, 1925, to October, 1926 |
| G. W. WILDIN.....      | November, 1926, to October, 1927 |
| E. J. DEVANS.....      | November, 1927, to October, 1928 |
| W. S. McABEE.....      | November, 1928, to October, 1929 |
| E. W. SMITH.....       | November, 1929, to October, 1930 |
| LOUIS E. ENDSLEY.....  | November, 1930, to October, 1931 |
| *JOHN E. HUGHES.....   | November, 1931, to October, 1932 |
| C. I. SNYDER.....      | November, 1932, to October, 1933 |
| F. O. DAMBACH.....     | November, 1933, to October, 1934 |
| R. H. FLINN.....       | November, 1934, to October, 1935 |
| R. P. FORSBERG.....    | November, 1935, to October, 1936 |
| E. A. RAUSCHART.....   | November, 1936, to October, 1937 |

\*—Deceased.

Meetings held fourth Thursday of each month except June, July and August.

## PROCEEDINGS OF MEETING

FEBRUARY 24, 1938

The meeting was called to order at the Fort Pitt Hotel at eight o'clock p. m., with President G. M. Sixsmith in the Chair.

Registered attendance was 244, as follows:

### MEMBERS

|                     |                         |
|---------------------|-------------------------|
| Adams, Frank W.,    | Daugherty, W. A.        |
| Aivalotis, John,    | Davidson, J. C.         |
| Allen, Earl M.,     | Davis, Charles S.       |
| Ambrose, W. F.      | Deakins, H. H.          |
| Ames, L.            | Dean, R. W.             |
| Anderegg, George W. | Dixon, C. P.            |
| Badgett, S. H.      | Dixon, J. M.            |
| Bagaley, W. W.      | Dobson, F. L.           |
| Baker, W. E.        | Eaton, Fred'k. H.       |
| Balla, J. A.        | Edsall, E. D.           |
| Balzer, C. E.       | Edwards, Walter         |
| Barnett, George     | Emery, E.               |
| Barr, H. C.         | Endsley, Prof. Louis E. |
| Baumann, E. G.      | Evans, David F.         |
| Beltz, J. D.        | Ferguson, George,       |
| Berg, Karl          | Fralic, C. F.           |
| Berg, Max           | Frauenheim, A. M.       |
| Buchanan, C. C.     | Frauenheim, Pierce      |
| Buckley, William    | Freshwater, F. H.       |
| Buffington, W. P.   | Friend, E. F.           |
| Buzzerd, J. P.      | Gilbert, William J.     |
| Burel, W. C.        | Galbraith, James R.     |
| Callahan, F. J.     | Gillespie, J. Porter    |
| Campbell, F. R.     | Glaser, C. J.           |
| Carey, C. D.        | Glaser, J. P.           |
| Carr, T. W.         | Glenn, J. H.            |
| Carter, E. D.       | Goda, P. H.             |
| Chaffin, H. B.      | Goldstrom, G. E.        |
| Chilcoat, H. E.     | Goodlin, C. L.          |
| Christy, F. X.      | Gray, M. L.             |
| Cipro, Thomas,      | Groves, W. C.           |
| Code, C. J.         | Haller, Nelson M.       |
| Colbert, J. T.      | Hamilton, W. H.         |
| Condon, W. H., Jr.  | Hamilton, R. F.         |
| Coombe, A. B.       | Haupt, H. H.            |
| Courtney, H.        | Hayward, Carlton,       |
| Crede, W. A.        | Heer, Walter,           |
| Cree, W. M.         | Hess, Charles A.        |
| Cudworth, H. D.     | Hilstrom, A. V.         |
| Dambach, C. O.      | Holbrook, E. L.         |

|                        |                      |
|------------------------|----------------------|
| Holmes, E. H.          | Purchard, Paul,      |
| Hoover, J. W.          | Rau, W. R., Jr.      |
| Huber, H. G.           | Reagan, Henry V.     |
| Hunt, Lawrence,        | Roberts, E. L.       |
| Hutchinson, G. C.      | Robertson, A. S.     |
| Jados, Walter,         | Rupp, E. S.          |
| Jakovac, Victor P.     | Rutter, H. E.        |
| Jarres, F. A.          | Ryan, D. W.          |
| Jennings, A. S.        | Schiller, John       |
| Johnson, J. W.         | Schrecongost, C. P.  |
| Kelly, L. J.           | Searles, E. J.       |
| Kentlein, John         | Sennstrom, H. R.     |
| King, George A.        | Severn, A. B.        |
| Kirby, D. D.           | Shellenbarger, H. M. |
| Krahmer, E. F.         | Shepherd, R. M.      |
| Kulp, J. G.            | Sheridan, T. F.      |
| Lanahan, Frank J.      | Shields, J. T.       |
| Lanning, E. H.         | Sixsmith, G. M.      |
| Lewis, N. F.           | Smith, M. A.         |
| Longdon, Clyde V.      | Staats, Kenneth A.   |
| Lowry, William F., Jr. | Stack, John          |
| Lundeen, Carl J.       | Stamm, Bruce B.      |
| Maliphant, C. W.       | Stamm, J. Duncan     |
| Millar, C. W.          | Stevens, L. V.       |
| Miller, W. J.          | Stoffregen, Louis E. |
| Miller, J.             | Stype, W. G.         |
| Miller, J. B.          | Sudell, D. W.        |
| Misner, George W.      | Sutherland, Lloyd    |
| Mitchell, W. S.        | Suttle, Albert H.    |
| Moir, W. B.            | Sutton, K. B.        |
| Molyneaux, Dawes S.    | Ternent, H. J.       |
| Monk, J. Thomas        | Teskey, Dr. W. J.    |
| Morgan, Homer C.       | Tracey, J. B. A.     |
| Mowry, James G.        | Trautman, H. J.      |
| McHail, J. L.          | Tryon, I. D.         |
| McKim, Hollis          | Urtel, E. J.         |
| McKinley, John T.      | Van Horne, C. F.     |
| McKinzie, Edward       | Vollmer, Karl L.     |
| McLaughlin, H. B.      | Van Woert, F. E.     |
| McNamee, W.            | Wallace, C. M.       |
| McPherson, A. R.       | Walter, E. R.        |
| Nagel, James           | Walther, G. C.       |
| Nathan, W. S.          | Walton, W. K.        |
| Neff, John P.          | Welton, A. A.        |
| Nelms, H. J.           | Whipple, A. L.       |
| Noonan, Daniel         | Williams, H. O.      |
| Paisley, F. R.         | Williams, Harry      |
| Parvin, C. F.          | Wilson, J. M.        |
| Perreas, S. J.         | Wilson, James R.     |
| Pollock, H. J.         | Yarnall, Jesse       |
| Posteraro, S. F.       | Zell, Harry A.       |



## VISITORS

|                     |                       |
|---------------------|-----------------------|
| Ackley, J. O.       | Hoover, William W.    |
| Aivalotis, Harry    | Hyland, E. C.         |
| Ankeny, M. J.       | Kelly, T. A.          |
| Ashcorn, J. M.      | Kenworthy, William S. |
| Bagaley, Robert F.  | Kester, M. B.         |
| Barnes, H. P.       | Klingensmith, W. S.   |
| Bossinger, H. L.    | Koch, Edward J.       |
| Breisacher, W. G.   | Lambert, W. J.        |
| Burg, Raymond,      | Laughlin, R. B.       |
| Chidister, J. F.    | Lenhard, A. W.        |
| Clarkson, G. E.     | Lesko, Andy           |
| Crago, P. H.        | Lewis, S. B.          |
| Davis, William B.   | Miller, James F.      |
| Eisele, H. G.       | Molyneaux, L. S.      |
| Elias, Thomas J.    | Montgomery, G. J.     |
| Eperthener, A. L.   | Murphy, D. L.         |
| Fenton, H. H.       | McKinstry, C. M.      |
| Fenton, Wayne H.    | Newmyer, W. C., Jr.   |
| Ferguson, Joseph C. | Ripley, L. H.         |
| Fitzharris, J. F.   | Rudolph, H. O.        |
| Fletcher, R. H.     | Rupp, J. E.           |
| Fogle, A. L.        | Schafer, Harold G.    |
| Forbes, J. J.       | Searles, J. D.        |
| Gandy, R. H.        | Sixsmith, J. M.       |
| Gardner, G. R.      | Smith, W. H.          |
| Gill, P. D.         | Street, Clayton K.    |
| Graburn, A. L., Jr. | Titus, H. J.          |
| Grego, John         | Urban, C. E.          |
| Halberg, E. J.      | Vollmer, W. K.        |
| Harper, J. T.       | Walker, W. S.         |
| Hemma, Charles H.   | Work, M. W.           |

PRESIDENT: Gentlemen, may I have your attention, please, and we will get along with the program that has been provided for this evening.

First, we will be entertained by Mr. Vincent Kroen, who will sing for us, accompanied by Mr. Josiah Smith at the piano. As you all know, Mr. Kroen is a member of this club and is also a member of the Entertainment Committee. He has very kindly consented to come down here tonight and favor us with a few songs. I have no doubt many of you have heard Mr. Kroen sing before. Mr. Kroen.

(Mr. Kroen sang several songs accompanied by Mr. Smith at the piano and received much applause.)

PRESIDENT: Thank you, Mr. Kroen. I am sure the Railway Club of Pittsburgh is very much indebted to you

Mr. W. J. Cameron of the Experimental Laboratories of the Ford Motor Company, Detroit, Mich., who was scheduled to address the Club at our April 28th meeting, unfortunately, through conditions beyond his control, will not be able to be with us at that time.

for the splendid entertainment you have rendered on this occasion.

Secretary Conway regrets, as much as we do, his inability to be present tonight, so we will endeavor to carry on the details of this work in his absence.

The roll call, as usual, will be dispensed with because of the registration at the door. Likewise, with your permission, we will dispense with the reading of the minutes of the previous meeting as they are already distributed in our book of official proceedings of the last meeting.

We have the following proposals for membership:

- Blaine, C. H., Welding Supervisor, Pullman-Standard Car Manufacturing Company, P. O. Box 71, Butler, Pa. Recommended by W. B. Moir.
- Finger, P. E., Mechanical Engineer, Standard Railway Equipment Manufacturing Company, New Kensington, Pa. Recommended by W. B. Moir.
- Hautman, Hugo, Assistant Superintendent of Foundries, Westinghouse Air Brake Company, 109 Harlow Street, Edgewood, Pa. Recommended by N. F. Lewis.
- Heer, Walter, Mechanic, Gulf Research, 1647 Maplewood Avenue, Wilkinsburg, Pa. Recommended by A. E. Goodwin.
- Nelms, Harvey J., General Manager, Pittsburgh Terminal Coal Corporation, 441 Lincoln Avenue, Cadiz, Ohio. Recommended by C. O. Dambach.
- Pollack, H. J., Vice President, Lincoln Gas Coal Company, 2949 Glenmawr Avenue, Corliss Station, Pittsburgh, Pa. Recommended by Carlton Hayward.
- Suttle, Albert H., Scrap Inspector, B. & O. R. R. Co., 55 Almeda Street, Pittsburgh, Pa. Recommended by F. A. Jarres.
- Vandling, J. E. Division Engineer, Pennsylvania Railroad, Pennsylvania Station, Pittsburgh, Pa. Recommended by C. M. Wheeler.
- Williams, Homer O., Serviceman, Time Recording Division, International Business Machines Corporation, 4211 Bigelow Boulevard, Pittsburgh, Pa. Recommended by Dr. Walter J. Teskey.

PRESIDENT: As is customary, these proposals will be referred to the Executive Committee and, in anticipation of favorable action on the part of that committee, may I not take this opportunity to welcome those gentlemen, whose names have just been read, as members of this club and I hope their having become members will be found to be well worth while. Likewise, may I not at this time extend a word of greeting to our guests who have favored us by their presence here tonight. We are always very glad to welcome any guests who may attend our meetings and hope you will enjoy the proceedings and will come back again.

Since our last meeting we know of the death of two of our members: Mr. T. E. Nestor, Division Engineer of the Pennsylvania Railroad, died January 31, 1938, and joined our

club November 22, 1934. Mr. Curtis B. Mellon, Assistant Foreman, Pennsylvania Railroad, died February 20, 1938, joined our club November 22, 1934. You will notice that both of these gentlemen joined this club on the same day of the same year and it just so happens that I had the pleasure of taking both applications on that particular date. A suitable memorial will appear in the next issue of our proceedings.

I would like to make another announcement at this time: Mr. Gillespie has asked that a short meeting of the Entertainment Committee be held immediately following the regular meeting this evening and if the members of that committee whose names are now read are present tonight I am sure Mr. Gillespie will be very glad indeed if they will meet with him for a few minutes: Mr. Vincent Kroen, Mr. W. C. Burel, Mr. H. E. Chilcoat, Mr. F. L. Foster, Mr. J. S. Lanahan and Mr. James Nagel. I hope such of those gentlemen as are present will meet at the piano, (that being a good place for the Entertainment Committee to meet) following this regular meeting.

The Railway Club of Pittsburgh scores another hit tonight. As you know, it is my endeavor to have as much variety as possible in these presentations at the club and have men come to this club forum who are well known and well qualified to speak on outstanding topics of the day respecting interests in which this club may be concerned. Pittsburgh, being located in the heart of the coal industry, it seems quite proper that he have a talk on mining, and I know of no gentleman better qualified to address us on that particular subject than the gentleman who will speak to you tonight. I think the club is to be congratulated, and certainly it is fortunate, in being able to secure this gentleman. I believe many of you know him. Certainly many of you have heard him. It is now with a great deal of pleasure and personal satisfaction that I present to you Mr. John J. Forbes, Supervising Engineer, Safety Division, United States Bureau of Mines, Pittsburgh, ably assisted by Mr. M. J. Ankeny, who will present the subject "The Coal Loader".

# THE WORK OF THE SAFETY DIVISION OF THE BUREAU OF MINES<sup>1</sup>

By J. J. FORBES<sup>2</sup>

## INTRODUCTION

The Bureau of Mines is in the United States Department of the Interior. It is one of the youngest bureaus in the regular Government establishment and was created July 1, 1910. It is headed by a Director, Dr. John W. Finch. The Bureau is composed of four branches, the Administrative, the Economics and Statistics, the Technologic, and the Health and Safety.

The Safety Division of the Bureau of Mines directs its efforts to preventing accidents and to promoting safety in the mining and allied industries of the United States. This dual purpose is achieved through three main lines of activities:

1. By services rendered to companies and individuals.
2. By educational activities.
3. By research and study of safety problems.

It is difficult to segregate the Safety Division work into the appropriate groups, for often one phase of the work may embrace two or even all three of the activities.

## SAFETY COURSES

First-aid training is one of the most popular services of this division of the Bureau of Mines. The inauguration of 100 percent first-aid training has been so successful that it is impossible with our limited personnel to meet all the requests for training. The complete training method, in brief, consists of giving a select group of keymen an intensive course of 30 or more hours of instruction in first aid. These men are required to teach part of each lesson before the class, and the men showing a clear grasp of the subject and an ability to teach are authorized to train classes of about 20 men. At the conclusion of the class instruction, a Bureau of Mines man examines the class, and if the men pass the examination, they are given first aid certificates and the person who trained the class is given an instructor's certificate. If an instructor teaches a class, of which 10 or more men pass the examination given by a Bureau man, once a

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1 Address given before The Railway Club of Pittsburgh, Pa., February 24, 1938. Published by permission of the Director, Bureau of Mines, U. S. Department of the Interior. (Not subject to copyright.)

2 Supervising Engineer, Bureau of Mines, Safety Division, Pittsburgh, Pa.



year for five years, his certificate becomes permanent. This plan provides a number of competent first-aid instructors who are capable of re-training employees at the mine or plant and who, by having a thorough knowledge of first aid will be valuable in rendering first aid to injured employees, thereby reducing the severity of many accidents. It is now fairly well accepted that first-aid training, as a part of an organized plan, is very likely to reduce accidents; first-aid-trained employees are thought by many well-informed ex-



Safety Car No. 3, picture taken at Pittsburgh, Pa., January 18, 1936.

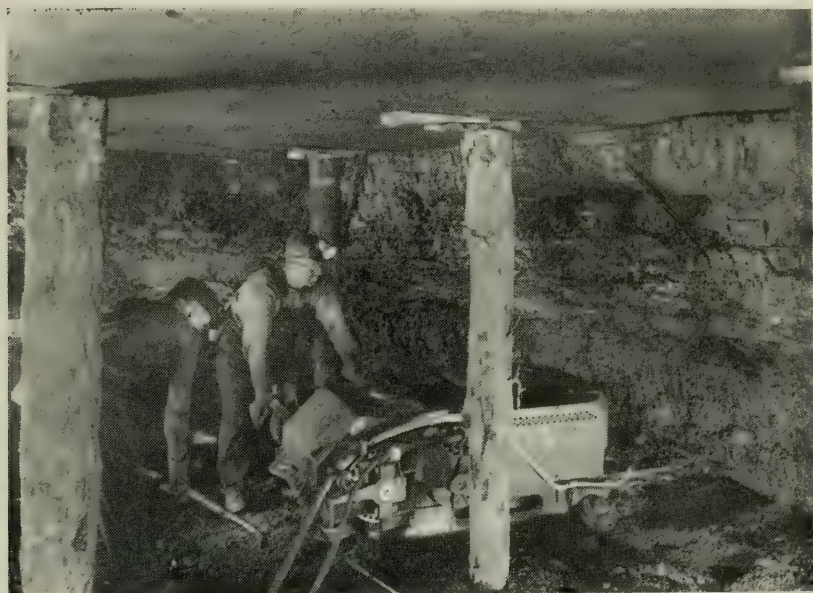
ecutives to be four to eight times safer than men who are not so trained.

The total number trained in first-aid and mine rescue methods by the Bureau of Mines to January 31, 1938, is 1,091,617. More than three-quarters of a million different persons have been trained in first aid alone. Before 1931, when the appropriations of the Safety Division were drastically reduced, nearly 100,000 persons were trained annually.

The American Petroleum Institute has taken charge of first-aid training in at least part of the petroleum industry. In preparing to take over the training and preparatory to issuing its own first-aid certificates for instructors, the Amer-

ican Petroleum Institute asks applicants for certificates: (1) the amount of first-aid training received from the Bureau of Mines and when this instruction was received; (2) the number of first-aid classes conducted by the applicant and the number of men trained by the Bureau of Mines method or any other method; and (3) the period of time over which the applicant's activity as a first-aid instructor extended.

The action taken by the American Petroleum Institute is probably what the Bureau of Mines would like to have done in all branches of the mining and allied industries. To



Undercutting the coal preparatory to blasting.

that end, the Bureau has developed the cooperative method of giving this training so that the greater proportion of the employees in these industries may be trained with a minimum of assistance from the Bureau, which will permit the personnel to conduct other safety maintenance work.

Mine rescue-training is necessarily restricted to a much smaller number of persons, but the work is of even greater importance to the individual that first aid because a man who attempts to assist in mine rescue endangers his own life. Only well-trained men should undertake this type of work. The training is strenuous, and every person tak-

ing the instruction must pass a prescribed physical examination. The training requires 20 hours, of which time 10 hours are consumed in doing work while wearing oxygen breathing apparatus.

Many private companies own oxygen breathing-apparatus to be used in emergencies. A valuable service of the Safety Division is the inspection of equipment in privately owned mine rescue-stations. Generally such inspections show that the apparatus is not in a safe condition for use because oxygen breathing apparatus is subject to rapid deterioration unless special precautions are taken in storing them.

In addition to the regular mine rescue training-course, the Bureau has developed an Advanced Course in Mine Rescue and Recovery Operations Following Mine Fires and Explosions, which has been especially prepared for mine officials and others who are desirous of becoming particularly proficient in the use of oxygen breathing apparatus. This training deals with the methods of detection of mine gases, sampling and analysis of them and methods of protection against them, organization and procedure at mine disasters, and methods of construction used in recovery operations such as stoppings, brattices, doors, and air locks.

Service at mine fires and explosions has always been one of the important functions of the safety work of the Bureau. Men and equipment are available at all times at strategically located points in the various mining districts of the United States.

Education of mine officials is attained principally by instructing others in accident prevention. Classes of mine officials, in groups of 20 to 25 men, are given an intensive course of 18 to 20 lessons by a specially trained engineer, including instruction on the value of accident statistics, prevention of mine fires and explosions as well as prevention of accidents from falls of roof and coal, haulage, electricity, explosives, and miscellaneous causes. The uses and construction of various safety devices are detailed. The value of safety clothing, supervision, discipline, health, sanitation, and mine safety organization is demonstrated. Before the course is half-completed, the benefits of this instruction become apparent; timbering methods generally improve with a resultant reduction in falls of roof and coal accidents; supervision becomes more effective; and accidents in general decrease.



At present this instruction is available only for bituminous-coal mines, but a course for metal mines is in preparation. Up to January 31, 1938, a total of 6,795 men had completed this course, and a large number of men have attended part of the lectures but have not completed the course. Education of mine workers is approached from a different angle, and an accident-prevention course for coal miners is being prepared and has almost reached completion.

The Bureau safety engineers, when giving the various courses of instruction at mines and plants, usually make a comprehensive safety inspection of the underground workings and the surface plant. Samples of mine air and mine dusts are collected and analyzed; complete report is made on safety conditions, analyses of samples collected are appended and discussed, and recommendations for improving safety are submitted for the consideration of the operator. These reports alone have been valued at \$500 to \$2,000 by operators. The engineers of the Safety Division from time to time accompany State mine inspectors in their inspection trips to acquaint these officials with the Bureau's inspection methods; ordinarily this results in increased safety in the inspector's district.



Tipple destroyed by explosion and fire.



Special investigations are made at the request of the operators or operating companies. Ventilation studies, both in coal and metal mines, are made to aid in increasing not only safety but also health conditions. Fire and explosion-hazard examinations are frequently undertaken, and special studies of mine illumination, flooding, drainage, etc., are made. These special investigations are supplemented by carefully prepared reports, in which are discussed the subjects studied and definite recommendations for improving safety practices or health are made.

## EDUCATION

Education is necessary for mine officials and mine workers alike. Safety accomplishments are possible only when the operating officials are convinced of advantages of the safety program. Education falls into three classifications: (a) "Selling" safety to the highest company officials; (b) giving safety instruction to supervisory officials; and (c) teaching the employees how to prevent accidents. Each phase of this work requires a different method of approach and only men who have had special training and experience as well as acceptable personality attributes are assigned to this work.

Convincing high executives as to the worthwhileness of safety effort in many cases is one of the most difficult tasks of the Safety Worker. Some executives do not like to have an outside agency inject itself into what they consider strictly their own business; others may be glad to receive all the help they can get in order to obtain greater safety. Many executives who have heard of the forwarding of safety through the help of the Bureau of Mines request advice and assistance.

The Bureau of Mines has no police powers and depends upon co-operation from those engaged in mining, including State and mine officials as well as all other persons engaged in work in and around mines. As a matter of policy and in the full realization that the greatest good can result only if the State inspection bureau or department co-operates fully, every effort is made to enlist the help of the State mine inspectors. The Safety Division has a safety program that dovetails with State mining departments' activities and, where the States have co-operated, enviable safety records

have been achieved. We have very close co-operative relations with the State inspectors of Pennsylvania.

Having obtained State co-operation wherever possible, representatives of the Bureau of Mines confer with the oper-



Surface demonstration of explosibility of coal dust.

ating executives of individual companies within a State and endeavor to convince them of the benefits of adopting a comprehensive safety program. A safety inspection of one or more mines is generally made, and the definite changes that should be made are then pointed out; often the efforts are unsuccessful at first, and in some cases it may take a major mine disaster to convince some executives of the soundness of the Bureau's proposals. Several years ago one of the district engineers of the Safety Division completed a safety inspection of a coal mine and tried in vain to have certain changes made to obtain even a semblance of real safety practices. He predicted an explosion and in transmitting the report on this mine to the Pittsburgh office he stated that he had predicted that an explosion would occur. Shortly afterward, a major explosion occurred in this mine. Much of the safety program suggested by this engineer was adopted when the mine was reopened; this one case has been fairly closely paralleled in numerous other instances.

The executive who has undertaken to make his mine safe, but has fallen short of his goal, generally is anxious to partake of the Bureau's advice; in such cases he is often quick to grasp the essentials, and willing to inaugurate an effective safety program.

At times the Safety Division is asked to help formulate a safety program for a mining company and almost invariably considerable good comes from this kind of co-operation. In 1928 a representative of this division presented a certificate of honor to a mine which had one of the most outstanding safety records among mines of this group in the United States. After the meeting, the general manager of another company in a different State remarked that he wished that he could achieve a similar record. He was assured that it could be accomplished and that his mine could win the trophy if he followed the Bureau's safety organization plan. He was skeptical but he followed the program outlined to him, and he not only won the annual safety trophy, but the reduction in accidents has effected a saving of scores of thousands of dollars since the program was initiated.

Experience has shown that mass meetings of employees at a mine are productive of increased safety, especially if the meetings are part of a larger safety plan. The Bureau of Mines promotes such safety educational work through an



organization known as the Holmes Safety Association, the plan of which consists of a national council, State and district councils, and local safety chapters at which the rank and file of employees are given membership. The work of the Holmes Safety Association in reducing mine accidents has been publicly commended by members of the Alabama Department of Mines and of the Alabama Coal Operators' Association and by the Pennsylvania Department of Mines,



Dust explosion coming from mouth of Experimental Mine.

as well as by others. Complete co-operation of safety organizations in these two States has resulted in a substantial reduction in mine accidents, largely through the medium of the chapters of the Holmes Safety Association. These meetings provide an opportunity for State inspectors, mine operators, safety engineers, Bureau of Mines representatives, and others to discuss accident hazards and preventive measures with the men most vitally concerned, the underground and surface workers. The reasons for adopting safety devices, practices, and clothing can be made clear, and antagonism to safety programs is generally removed.

The question of safety is often presented to miners assembled for the regular meetings of the miners' organizations.



With few exceptions, the advantages of safety are seen, and a vote to accept a suitable accident-prevention plan is taken. A number of the chapters of the Holmes Safety Association recently installed have been formed because of requests from the local miners' organization.

### MINE SAFETY RESEARCH

Mine safety research has been one of the principal activities of the Safety Division; however, due to drastic reductions in appropriations and personnel, this work has been considerably curtailed during the past few years. One of the most vital questions of health and, consequently, safety, especially in metal mines, is the harmfulness of mine dusts. Silicosis is a disease caused by breathing mine dust, and while its presence is generally well known, but little has been done in many mining communities to prevent it. The Safety Division has assisted in the research on this problem by making surveys of mines, collecting samples of atmospheric dust and making many other investigations connected with the occurrence of dust in and around mines. The studies so far made indicate that any dust, if inhaled in sufficient quantities over a long enough period, is likely to be harmful. The personnel of this division can, if funds permit, make a survey of a mine, collect representative atmospheric dust samples, and advise the mine management of the relative hazard from dust. Recommendations for eliminating the dust hazard or ameliorating the dust condition can be made.

This brief outline of the work of the Safety Division of the Bureau of Mines has been general in scope to acquaint you with the character of work that is being conducted. The mechanism of the various activities has been omitted, although I shall be glad to expand on any points that may be of more vital interest to you.

Tonight we are going to show a sound motion picture, and hope to demonstrate the value of motion pictures, especially sound motion pictures, in conducting safety educational work. Several years ago we made three silent motion pictures on 16-millimeter film covering the occupations of "The Coal Loader", "The Shot Firer", and "The Coal Cutter". These pictures were virtually an analysis of these occupations and were intended to teach the workers of each the safest and most efficient way of doing their jobs. The pic-

tures were made by our own employees and the illuminating equipment was of our own design. These pictures have been used in their silent form to good advantage by our field representatives throughout the bituminous field during the past five years. Appreciating the value of adding sound to the pictures, we recently acquired 16-millimeter sound recording equipment and have completed the recording of sound on our "Coal Loader" picture and on our "Shot Firer" picture. These pictures have been shown at several places and were favorably received. In order that you may judge for yourselves the value of this type of work, we take pleasure this evening in showing "The Coal Loader".

When we have completed the recording of sound on the films which we now have, it is our intention to continue our educational program by making additional pictures on mine safety subjects using the sound technique. Incidentally, the pictures we make are not intended for general circulation, but rather they are intended for the use of our field personnel to supplement their work of teaching safety to the men of the mineral industries. I would be pleased to have your reaction after you have seen and heard "The Coal Loader" picture.

(Moving picture "The Coal Loader" followed at this point).

PRESIDENT: Thank you very much, Mr. Forbes and Mr. Ankeny, for this wonderful presentation. Gentlemen, I think you will all agree with me when I say that your Subject Committee has scored another hit in our effort to present instructive and interesting entertainment at these meetings. Before this meeting adjourns I am going to ask the Chairman of your Executive Committee, Mr. Lanahan, to give adequate expression of our appreciation to Mr. Forbes and Mr. Ankeny. In the meantime, Mr. Forbes has kindly consented to endeavor to answer any questions that any of you gentlemen would like to ask him. We would be very glad at this time to hear any questions that you might care to ask Mr. Forbes.

#### DISCUSSION

MR. H. H. HAUPT: Mr. President, I would like to ask Mr. Forbes about something I thought I noticed in the picture. Considerable stress was laid on the removal from the

miners of any matches, cigarettes, and articles of that kind, but at the same time—at least I thought I noticed this in the picture—the miners go in carrying a straight open flame light and light it before they enter the shaft. I would like an explanation of that.

MR. FORBES: I am very glad you asked that question. That is the very thing that is not in the picture. The lamps shown are permissible cap lamps. As you know, 25, 30, and 35 years ago—and even since the Bureau of Mines came into existence, as far as that goes—a large number of the explosions in coal mines have been caused by open lights, and by that I mean open flame lamps. I remember the old oil lamps, and then the advent of other types of open lights. A miner would come into his working place and encounter an explosive mixture of gas and the open light would ignite it. If the mine wasn't rock-dusted, propagation of the explosion would result, maybe killing everybody in the mine, because coal dust—all coal dust, bituminous, subbituminous, and lignite—is explosive, except anthracite, and we are not so sure that under some conditions it is not. In other words, before the advent of rock-dusting, if an ignition of gas at the face occurred, coal dust would be very likely to propagate or extend it throughout the mine.

One of the big jobs put up to the Bureau of Mines when it first came into existence was how to stop this loss of life resulting from explosions in the mining industry. Development work was promptly started on permissible electric cap lamps and I am glad to say that today they are highly efficient and absolutely safe. The mining laws in Pennsylvania, West Virginia, and numerous other coal-mining States require the use of permissible electric cap lamps in gassy mines, so that should a miner go into a place where there is an accumulation of gas, the lamp will not ignite it.

Another thing commented on in the picture is rock-dusting. This is a real explosion-prevention measure inaugurated in this country by the Bureau about 25 years ago. Coal dust, as I said before, is explosive except when mixed with a certain amount of inert material. We find the best inert material to use in coal mines is fine rock dust or limestone dust spread on the ribs (sides), roof, and on the floor of all mine passageways, so that if an ignition of gas or dust occurred accidentally at the face or at any other part of



the mine, this inert dust will stop the explosion from spreading throughout the mine. I could talk at some length about permissible electric cap lamps and rock-dusting as explosion preventives, but I will say briefly that the effect of efficient rock-dusting is to prevent ignitions of coal dust and to prevent initial local gas explosions from firing the coal dust and spreading the explosion throughout the mine.

An explosion occurred within 100 miles of Pittsburgh within the past month and there were over 600 men at work in the mine at the time. Briefly, there was an ignition of gas by an electric arc but, due to the fact that the mine was thoroughly and completely rock-dusted, the explosion was stopped from spreading and only a few men in the explosion zone were affected. This explosion was stopped absolutely by effective rock-dusting and the lives of approximately 600 men were saved.

Examples such as these, people in other industries do not hear very much about. There has been substantial progress made in reducing deaths from explosion disasters in the past several years in coal mines. Many lives have been saved in the coal-mining industry by the introduction of effective safety measures, such as permissible mining equipment, rock-dusting, safety educational work, and, last but not least, better ventilation of our mines.

MR. HAUPT: As to the application of this rock dust to prevent explosions: We have explosions in grain elevators. Now, this may be a foolish question, but I am wondering if a similar application of that nature could possibly prevent explosions in grain elevators.

MR. FORBES: I imagine it would. Do you know Mr. David Price of the Agricultural Department?

MR. HAUPT: No, sir, I do not.

MR. FORBES: He is the man for you to contact on this very important subject. You gentlemen may be surprised to know that even the dust in grain elevators that this gentleman talks about is violently explosive. In addition, many other industrial dusts are explosive. Mr. Price is the man for you to contact. He is chief of the Chemistry and Soils Division of the Department of Agriculture. If you will write to Mr. Price I feel sure he will be only too glad to give you information on this subject.



MR. CLARKSON: Mr. Forbes, you know that recently, within the past few months or within the past year, we have heard a whole lot about silicosis from silica dust. You mention the use of rock dust. I trust the rock dust you use in coal mines does not contain any amount of silica dust as to cause it to be unsafe from that standpoint.

MR. FORBES: I will try to answer your question. The effect of breathing dusts by workers is a live subject in all industries. It is a subject that we could discuss for hours and not get very far with it, but insofar as rock dust in coal mines is concerned there is not enough of this dust raised into the air of the mine to cause injury to the lungs. It has been found as a result of investigation that the rock dust along mine passageways is not swept from them in sufficient quantity by underground transportation methods to be injurious to workmen. The hazard is further reduced by the use of dust containing little or no silica. Does that answer your question? I believe that Mr. Nelms will be glad to get that information. There is, however, a definite dust hazard to the men engaged in rock-dusting; if rock-dusting is applied counter to the direction of the air current, the operators would be enveloped with dust. This condition may be obviated by applying the rock-dusting in the same direction as the air current. Moreover, there is protective equipment procurable to protect men in dusty occupations from the dust.

PRESIDENT: Are there any other questions any of you gentlemen would like to ask Mr. Forbes?

QUESTION: Are these methods of safety you have shown us here compulsory on all mine owners?

MR. FORBES: Absolutely not. I am glad you asked that question. The Bureau of Mines' work is entirely of a co-operative nature. The Bureau does not have police powers. Our work is done in co-operation with State mining departments, mining companies, and other mining and safety organizations. No one is compelled to do any of the safety measures advocated by the Bureau, but there are State mining codes which require mining companies to do many of the safety measures which you observed in the picture.

QUESTION: Are they general?

MR. FORBES: Some mining States have very good mining laws, while some other States do not.

QUESTION: Are there some mines that still use the open flame lamps?

MR. FORBES: You may be surprised to learn that there are still some States where open lights are allowed. They are permitted by law under certain conditions, but insofar as the Bureau of Mines is concerned, we believe that all coal mines should be equipped with permissible electric cap lamps.

QUESTION: There is no national law?

MR. FORBES: No, the mines are regulated by State law.

QUESTION: Do you think it would be an excellent idea if there was such a law?

MR. FORBES: Yes, sir. I believe that all underground mines should be required to use the electric cap lamp.

MR. HARVEY NELMS: Mr. Chairman, it might interest this gathering to know that there is a term in connection with coal mining called "Cost of Production". I think the coal mining fellows are the only ones in the game that have that term. It has just come to my notice that our prices are gone on Friday at midnight. I think it might be interesting to know, when you saw that car loaded, it cost the coal mine operator, at that stage, 95 cents per ton. That is his exact cost, according to the present scale, to the loader; to the machine-man and for yardage work it is 76.8 cents. That 95 cents just represents that coal in the car at the face. Put that car of coal in a railroad car, add 95 cents more to it, and it is \$1.90 coal. I doubt if there is an operator in Western Pennsylvania that can produce coal for his complete cost at \$1.90. Imagine the profits we are getting at 78 cents.

MR. FORBES: Prevent mine accidents and you lower the cost of production.

MR. MAX BERG: How long has the rock-dusting process been used and who was the discoverer or inventor of the method?

MR. FORBES: In the early nineties it was observed by several European investigators and later on the information was brought to the United States by G. S. Rice, chief mining engineer of the Bureau of Mines, that an explosion could be checked and would not propagate in the parts of a mine where shale or other inert dust was present in large amounts. After the disastrous Courrières explosion in France that killed 1,100 men, coal-dust explosion tests were made in France in 1907 and in Great Britain in 1908 which resulted in the conclusion that if enough incombustible dust were properly spread throughout passageways more or less heavily coated or covered with coal dust, the propagation of an explosion by the coal dust could be prevented.

Following a series of disastrous explosions in the United States during 1907 and 1908, Congress authorized the investigation of the causes of mine explosions and of possible methods of preventing them, with the result that during 1911 the United States Bureau of Mines, after making numerous tests, suggested that rock dust be used in gassy or dusty bituminous coal mines.

Many of you gentlemen no doubt remember when the Bureau of Mines first come into existence here; in the early days it was located at 40th and Butler Streets. One of the first jobs was to prove to coal-mining people that coal dust was explosive. Mining experts were brought in from all States back in 1910. They had a big steel gallery—which, by the way, is still out at the Experimental mine at Bruce-ton, Pennsylvania,—with which they demonstrated that coal dust was explosive. The mining people said, "You have demonstrated that it will explode under controlled laboratory methods, but how about its practical application in the mines?" The Bureau of Mines then had to get busy and set up the first experimental mine in the world and it is located within 15 miles from Pittsburgh. I do not know whether any of you ever have been there, but you should visit the mine when you have an opportunity and see what is being done. The Bureau of Mines started, back in 1910, to preach the propaganda of the explosibility of coal dust, but it was not generally accepted by the industry until the last 10 years, and even today there are hundreds of mining companies that have not protected their mines as vigorously as we would like to see done. However, progress is gradu-



ally being made. It is a process of education. There is a history connected with it, but I would say Mr. George Rice, chief mining engineer of the Bureau of Mines, who just retired, was the man who really introduced rock-dusting in this country.

MR. BERG: The reason I asked that question is that in Europe, in France and Belgium, they have little mines of bituminous coal which is lignite, and it is generally nothing but dust which they press into briquets. They have had some terrible explosions there. At that time I saw high buildings they used in trying to eliminate the explosion danger by high-velocity ventilation.

MR. FORBES: The first requisite in coal mine safety is adequate ventilation.

Are there any other questions, gentlemen? Our original intention in showing this picture tonight was to give you an idea of the value of sound on film in the promotion of safety educational work for possible use in connection with your particular industry. If there are any questions on this subject, we shall be glad to try to answer them; also, if you are especially interested in this matter, I take pleasure in inviting you to come to the Bureau of Mines Experiment Station at 4800 Forbes Street here in Pittsburgh and we will show you what we have done and our future plans for sound picture work. We are now ready to go ahead with our sound-on-film educational program. The picture which you have just seen showed the safety measures used in connection with the work of the coal loader. This picture is shown to gatherings of coal miners to impress on them the safe way in performing their work.

MR. YORK: How do you control the sparks that run on machinery down in the mine?

MR. FORBES: By the use of permissible electrical equipment properly maintained. The testing of electrical machinery such as mining machines, pumps, drills, and so on, is done here in Pittsburgh by our Electrical Section following a prescribed schedule of tests. If such equipment passes all of these tests, it is placed on the permissible list. The Bureau of Mines has established a schedule for testing electrical equipment for the benefit of the mining companies



using it. If the equipment tested does not come up to our requirements in regard to safety, it is not approved and therefore is not given our permissibility plate. If it does come up to our requirements, it may be labeled permissible equipment. There are many coal mines using nonpermissible equipment, but I am glad to tell you that the newly enacted Pennsylvania mining code requires all gassy and dusty mines to use only permissible electrical equipment, so our mines in this State and some of our other coal-mining States have or soon will have such equipment as a protective measure for their employees.

There is also a schedule for testing explosives for permissibility. Substantial safety progress has been made in the past 25 to 30 years by the use of safe explosives for blasting coal and rock in our coal mines. In the early years of coal mining a large number of disastrous explosions were caused by blow-out shots of black blasting powder due to the long duration of flame from this type of explosive. The coal as a general rule was blasted "off the solid", and if the explosive had too much work to do, it blew out and the accompanying long flame came with it which raised and ignited the coal dust, and a coal-dust explosion would occur. One of the first investigations undertaken by the Bureau of Mines in the early days was to ascertain the kind of explosives that could be safely used for blasting in coal mines. Largely as a result of this investigation, permissible explosives were introduced for blasting. Explosives are submitted to the Bureau and subjected to a schedule of prescribed tests at the explosives testing station, Bruceton, Pa. If such explosives pass the tests, they are placed on the permissible list and so labeled.

QUESTION: Do all mines use that?

MR. FORBES: Not all.

QUESTION: There are new laws for everything else; why not make new laws for that?

MR. FORBES: Pennsylvania now has a law that requires the use of permissible explosives, permissible mining machinery, rock-dusting, and other progressive safety measures in any gassy mine in the State. There are some other coal-mining States that have such laws to at least some extent.

QUESTION: A number of years ago I had occasion to go into the inside of one of the Department's railroad cars. They were equipped and I noticed quite a few canary birds. Are canary birds still used in that work?

MR. FORBES: That is my branch of the work. It seems foolish for me to talk to you gentlemen on safety measures because the railroad industry has an outstanding safety record, which I have often cited in my talks before mining people. The railroads have done a remarkable job in accident prevention.

About Bureau railroad cars, which we call mine safety cars, we now have ten, but I am sorry to say only two are in operation, one of which is working in the mining centers of southern West Virginia and the other at the present time is carrying on training and safety work in the anthracite regions of Pennsylvania. All the other cars are side-tracked for lack of funds to operate them. Canary birds or small animals are still used. One canary bird may be a little less sensitive than another, but we do not stop at using one—we generally use two at a time in recovery work following mine fires and explosions. In addition to the use of canaries, we also use a carbon monoxide detector. A carbon monoxide detector is an instrument by which we can detect the presence of carbon monoxide mechanically. This device, together with many other somewhat similar devices used for the detection of mine gases, is available to the mining and allied industries for possible use in event of emergencies or for normal testing procedure.

Since the Bureau of Mines came into being, many useful appliances such as protective and detective equipment are available and manufactured in this country. We have not lagged behind foreign countries in the development and use of such equipment for the mining industry. We have in this country now the most modern, up-to-date mine rescue-equipment in the world; 25 years ago we imported all such equipment from abroad. As far as methane is concerned, of course you saw in the picture a flame safety lamp methane detector, which is a common instrument in use by mine officials. More accurate determinations are made by laboratory analysis or by means of the modern electrically operated detectors.

QUESTION: Then, why do you use canaries in connection with the detectors?

MR. FORBES: As a supplemental method. We do not like to put full dependence on either the birds or the instrument.

QUESTION: In other words, you take no chances?

MR. FORBES: The canary is very susceptible to small percentages of carbon monoxide gas. We carry them along with us in conjunction with the carbon monoxide detector.

QUESTION: Who thought of the canary?

MR. FORBES: Investigation was carried on by the Bureau of Mines in the early days, not only with canaries, but with mice, rabbits, and other small animals. All the small animals were found to be affected by a small percentage of gas, but the canary bird is more susceptible than other small animals. That is the reason we have used them since the early days. In 23 years' experience in the Bureau of Mines I have never lost a canary bird during rescue operations by gas poisoning.

PRESIDENT: Now we have another gentleman in the room I would like to present to you. He has been on his feet once, but I think he might care to add to what he said before which was in the nature of a question. I present Mr. G. E. Clarkson, Manager of the Safety Council of Pennsylvania.

MR. G. E. CLARKSON: Mr. Sixsmith and gentlemen. It is a pleasure indeed to be with you here this evening. It was my pleasure two years ago to attend one of your meetings. You are a fine bunch of fellows and good fellowship obtains here. I always like to come over here.

I was impressed particularly by what Mr. Forbes told you relative to safety work in coal mining. For the past eighteen or nineteen years my work has been in connection with safety in this and other communities, so of course, I do not want to lose an opportunity at any time to emphasize it, although I only have a few moments.

Mr. Forbes spoke of first aid training being one of the channels through which we put across safety work. That was never brought to my attention more forcibly than just



last week when I had the pleasure and privilege of going out to the Alcoma Country Club and awarding the President's Medal of National Safety Council to a gentleman out there who had acquired a knowledge of first aid, especially that branch of first aid called the Schaefer prone pressure method of resuscitation. This gentleman, with the assistance of a caddy, resuscitated a gentleman who had been struck by lightning out at the Alcoma Country Club about six months ago. A foursome went out to play golf, a rain came up, and lightning struck this gentleman. He is one of your neighbors here, a rather prominent business man connected with the Crandall-McKenzie-Henderson cleaning business, Mr. Henderson. He was revived in about a half hour's time because one man recognized an emergency and knew what to do. That man immediately applied the prone pressure method of resuscitation. The first thing he did was to turn this man over and pull his tongue out of his mouth. He had almost swallowed his tongue. Then he began the prone pressure method of resuscitation, the purpose being to start the old diaphragm going again as it was temporarily paralyzed; to start the air by pushing on his ribs at designated intervals pushing the air out of the lungs, a vacuum being formed and the air brought back in again as we would breathe. This man was brought back in about a half hour or so. It was my privilege to award this medal to this gentleman out there who applied first aid and revived Mr. Henderson.

The reverse English comes to me always in a human interest way. There we were saving lives. I try to visualize the whole thing for you in a human interest sort of way.

A human life went out the other day. There was an item in the newspapers about it. Some recognized the name and passed on to other things of the day; some, a very few, gathered around the half light of a stricken home to grieve over the remains of a loved one. Get the picture with me. In a few short hours a new headstone and fresh flowers marked a new resting place in the great silent city of the dead. A human life, gentlemen, went out the other day.

Two hundred and eighty went out the other day and every day of the year and thus we mark up this awful toll of one hundred and ten thousand men, women and children that lost their lives and lose their lives yearly in this beautiful country of ours. Consider the number we kill on the



highways; 38,700 last year. That is the highest classification of all we have, even with the record coming back up in industry in 1937 to about 20,000. In the homes we have a second classification. We have about 34,500 that were killed in the homes last year. We made a fairly good record. We reduced that from about thirty-seven or thirty-eight thousand the year before, but the number killed by automobiles is going up. The industry is gaining and that number is going up.

A human life went out the other day. An accident happened and someone was heard to say that accidents are bound to happen. No, they do not just happen; they are caused, which we can charge to the careless, thoughtless and indifferent acts of men and women, taking their own and other people's lives. If people will stop saying that accidents will happen and demand an investigation that will correct conditions and put a stop to it.

Yes, gentlemen, a human life went out the other day. There is a vacant seat in some school room; there is a vacant place behind some automobile steering wheel; there is a vacant place in some industry; there is a vacant chair in some home, a vacant chair where once sat hope, sorrow, joy, aspiration, love, a vacant chair that will remain vacant forever to those who remain behind, their memories indelibly fixed upon the tables of time, as a kiss of time upon the lips of eternity.

Yes, my friends, death is the final chapter in the book of human life and one accident reaches forward or starts that final chapter and brings it forward ten, twenty, thirty, forty, fifty, sixty, or even seventy years in the case of a child. A crime has been committed against God and humanity and, gentlemen, I say to you that the primary purpose of the Western Pennsylvania Safety Council is to prevent this kind of accidents.

Our approach, well, what is it? What is the fundamental approach to the prevention of accidents? It is three-fold. Education is possibly the best and most effective approach, but there is engineering and there is enforcement. Yes, there is enforcement, law enforcement if you please, upon the highways, discipline and what not in your industries and so forth. There is a positive approach: telling people what to do, as Mr. Forbes has told you here tonight

and illustrated by his moving pictures how to do it in a safe way with safe methods and so forth, giving that information to people in a definite form so that they can use it. Is not that the purpose of our own special work in Western Pennsylvania and our special object is to reach the children, these children of ours who grow up to be our men and women of tomorrow. The children are our special concern. They are young; their minds are elastic; they are open to instruction. They take up habits very shortly and carry them into practice in after life. The children and the child; that is our special work in Western Pennsylvania.

Gentlemen, it has been most worth while and a great pleasure for me to be here with you again and I thank you very much.

PRESIDENT: Thank you very much, Mr. Clarkson, for your very splendid and forceful message. I rather feel we will all be benefitted thereby.

I would just like to say that we feel very much encouraged by the increasing interest displayed in our meetings in the way of increasing attendance. It is a source of great satisfaction to us. I would like at this time to call your attention to the fact that our next meeting will be held in this room on March 24th when we expect to present for your interest and benefit another hit.

Now, gentlemen, before closing we will ask Mr. Lanahan to say a few words to you. Mr. Lanahan.

MR. FRANK J. LANAHAH: Mr. President and Fellow Members and Guests: After that eloquent and dramatic address on the subject of safety by my good friend, George Clarkson, it would be presumptuous upon my part to even attempt to pursue the subject further. So, I will just bask in the sunshine of George's achievements and make known to you that I am a Director in the Western Pennsylvania Safety Council of which Mr. Clarkson is the executive officer.

Surely, a splendid presentation of practical safety has been made by both Jack Forbes and George Clarkson. We could not help but realize from Mr. Forbes' narration, that "Perfection in safety is made up of trifles, but perfection, itself, in safety (or any other thing) is no trifle". The numerous illustrations of the various methods employed for the conservation of human life, am sure have made lasting

impressions on every individual in this room. There is no doubt in the minds of any of us, that Messrs. Forbes and Ankeny have rendered us a signal service.

Emphasis was stressed on the First Aid training given to mine workers. May I call to the attention of Mr. Forbes' audience tonight, that we in the Boy Scout movement have continually recognized that fact, for in every contest that we have had to demonstrate the proficiency of the Scouts in safety work, we immediately requisitioned the people identified with Mr. Forbes' industry to serve as Judges, and classify the boys who participate in the contest.

Before passing to the very pleasant duty of thanking our speakers tonight, I wish to say to Mr. Nelms, the gentleman who spoke about the cost of coal production, while, of course, we all sympathize with him, I feel that I can gain the heartfelt commiseration of this entire audience, by simply mentioning that in the malleable iron business with the inadequacy of return on manufacturer, were we to reach the status that exists in coal production, we would consider ourselves affiliates of Mr. Rockefeller.

Giving a little local color to the accident about which Mr. Forbes spoke, it is pertinent to mention there were two people connected with that mishap, who a large number of the railroad men and the manufacturers know; one is Mr. Caldwell Moise, official of the National Tube Company, and the other Mr. Lou Hicks, identified with the coal industry. Here, again, in the practice of First Aid did the Boy Scouts come in for commendation. It no doubt will interest you gentlemen to learn, that recently one of the Judges in the Court of Common Pleas of Allegheny County made the statement in the twenty-seven years existence of the Boy Scout organization in this section, they had never had up before them as a prisoner, a member affiliated with the Boy Scouts.

Now, Mr. President, it is my pleasure on behalf of this large audience here tonight, who by their keen and earnest attention have manifested a continued interest in the proceedings, I extend thanks, first, to the Bureau of Mines for their courtesy in making this talk tonight possible, and have them know how we appraise this subject as meaning much to the lives of the people of this Commonwealth, and to you, Mr. Forbes, particularly, for the splendid earnest manner in which you delivered your message, and to Mr. Ankeny, who

so ably manipulated the slides. We surely all were well entertained. Now, may I ask that you gentlemen here, as a token of appreciation, just rise that our speaker and his assistant may have visible evidence of your pronounced gratitude?

(A rising vote of thanks was given at this point).  
Now Mr. President, having discharged that duty, may I interrogate Mr. Forbes and ask, "Do those canary birds sing?"

PRESIDENT: Gentlemen, lunch is being served at the other end of the room and we are looking forward with pleasure to seeing you again, Mr. Forbes, at some future meeting. The meeting is adjourned.

J. D. CONWAY, Secretary.





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MARCH 24, 1938.

No. 5.

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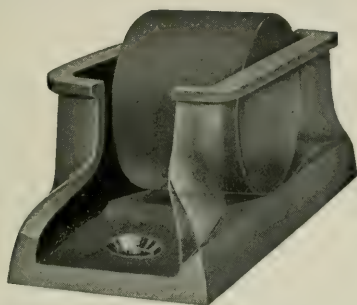
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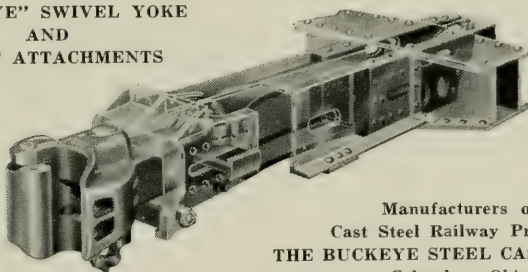


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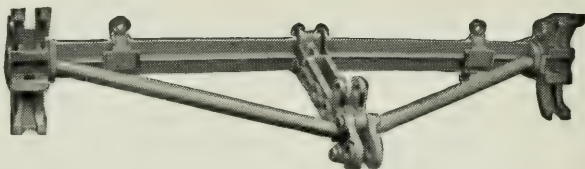
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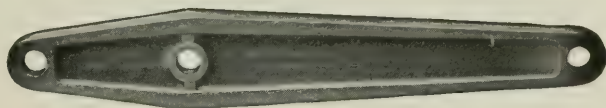
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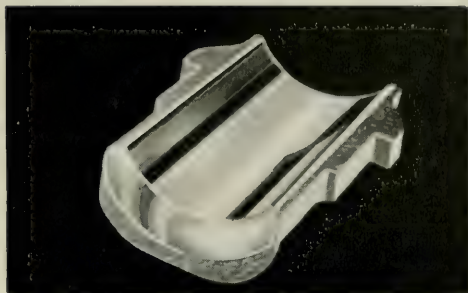
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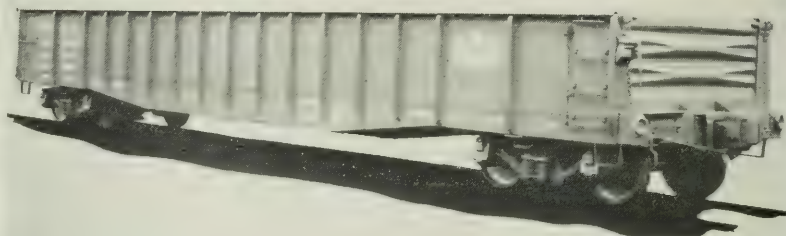
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|----------------------------------------------------------------------|--------------------------------------------|----------------------|-----------------|------|---------------------------------|----------------------|-----------------------------|---------------------|----------------------------------|-----------------|------------------------------------------------|---------------|------------------------------------------------|
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| SHOPS                                                                | A                                          | D                    | C               | B    | D                               | D                    |                             | E                   | D                                |                 | F                                              | E&G           |                                                |
| BRIDGES                                                              | A                                          |                      |                 |      | D                               | D                    | D                           |                     | D                                |                 |                                                | E&G           |                                                |
| TUNNELS                                                              | A                                          |                      |                 |      | D                               | D                    | D                           |                     |                                  |                 |                                                | E&G           |                                                |
| DRIVEWAYS                                                            | A                                          |                      |                 |      | D                               |                      | D                           |                     |                                  | F               |                                                |               |                                                |
| POWER HOUSES                                                         | A                                          | D                    | C               | B    | D                               | D                    |                             | E                   | D                                | C               |                                                | E&G           |                                                |
| STRUCTURAL                                                           | A                                          | D                    |                 |      | D                               | D                    |                             |                     | D                                |                 |                                                | E&G           |                                                |
| GRADE CROSSINGS                                                      | A                                          |                      |                 |      |                                 |                      | D                           |                     |                                  |                 |                                                |               |                                                |
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| RAILROAD MARINE<br>OPERATIONS                                        | A                                          | D                    | C               | B    | D                               | D                    |                             |                     | D                                | C               | F                                              | E&G           | H                                              |

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Title.....

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Recommended by.....



OFFICIAL PROCEEDINGS  
OF  
**The Railway Club of Pittsburgh**

Organized October 18, 1901

Vol. XXXVII.  
No. 5

**Pittsburgh, Pa., Mar. 24, 1938**

\$1.00 Per Year  
25c Per Copy

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S. G. DOWN, Vice President, Westinghouse Air Brake Company, Wilmerding, Pa.

HARRY C. GRAHAM, Pittsburgh Screw & Bolt Corporation, Pittsburgh, Pa.

J. W. SCHAD, Division Master Mechanic, B. & O. R. R. Co., Pittsburgh, Pa.

A. A. READ, Duquesne Slag Products Company, Pittsburgh, Pa.

C. P. SCHRECONGOST, Traffic Manager, Hillman Coal & Coke Company, Pittsburgh, Pa.

## ENTERTAINMENT COMMITTEE:

J. PORTER GILLESPIE, Chairman, Asst. Gen. Supt., Lockhart Iron & Steel Co., Pgh., Pa.  
 VINCENT KROEN, Vice Chairman, Supervr., Express Service, Penna. R. R., Pgh., Pa.  
 W. C. BUREL, Master Mechanic, Western Allegheny Railroad, Kaylor, Pa.  
 H. E. CHILCOAT, Gen. Mgr. of Sales, Koppel Div., Pressed Steel Car Co., Inc., Pgh., Pa.  
 F. L. FOSTER, Supt. Freight Transportation, P. & L. E. R. R. Co., Pittsburgh, Pa.  
 J. S. LANAHAN, Vice President, Fort Pitt Malleable Iron Company, Pittsburgh, Pa.  
 JAMES NAGEL, Asst. General Superintendent, Montour Railroad Company, Coraopolis, Pa.

## FINANCE COMMITTEE:

M. A. SMITH, Chairman, General Manager, P. & L. E. R. R. Co., Pittsburgh, Pa.  
 J. B. DIVEN, Superintendent Motive Power, The Pennsylvania Railroad, Pittsburgh, Pa.  
 F. J. RYAN, District Representative, Detroit, Toledo & Ironton Railroad, Pittsburgh, Pa.  
 C. E. CATT, Division Accountant, B. & O. R. R. Co., Pittsburgh, Pa.  
 G. W. HONSBERGER, Transpn. Mgr., Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

## ADVERTISING COMMITTEE:

J. H. JAMES, Chairman, Purchasing Agent, P. & L. E. R. R. Co., Pittsburgh, Pa.  
 J. C. SHINGLEDECKER, Supervisor of Service Stations, The Pennzoil Co., Pittsburgh, Pa.  
 CHARLES M. WHEELER, Sales Engineer, Union Switch & Signal Co., Swissvale, Pa.

## MEMBERSHIP COMMITTEE.

W. B. MOIR, Chairman, Chief Car Inspector, The Pennsylvania Railroad, Pittsburgh, Pa.  
 LLOYD SUTHERLAND, Vice Chair., Gen. Storekeeper, P. & L. E. R. R., McKees Rocks, Pa.  
 T. FITZGERALD, Vice Pres. & Gen. Mgr., Pittsburgh Railways Co., Pittsburgh, Pa.  
 G. C. HARPER, General Superintendent, Montour Railroad Company, Coraopolis, Pa.  
 FRANK A. JARRES, Assistant Storekeeper, B. & O. R. R. Co., Pittsburgh, Pa.  
 C. S. LEET, Assistant General Manager, B. & L. E. R. R. Co., Pittsburgh, Pa.  
 C. R. MEGEE, Dist. Mgr. Car Service Div., Association of American Railroads, Pgh., Pa.  
 R. C. MCINTYRE, Supt. Motive Power, Union Railroad Company, East Pittsburgh, Pa.  
 H. C. PRINGLE, Vice Pres. & Supt., Monongahela Connecting R. R. Co., Pittsburgh, Pa.  
 S. B. RILEY, General Superintendent, P. & W. Va. Ry. Co., Pittsburgh, Pa.  
 JOHN B. WRIGHT, Asst. Vice President, Westinghouse Air Brake Co., Wilmerding, Pa.  
 F. H. EATON, Sales Engineer, American Car & Foundry Company, Pittsburgh, Pa.  
 C. W. GOTTSCHALK, Asst. Traffic Manager, Jones & Laughlin Steel Corp., Pgh., Pa.  
 THOMAS R. FITZPATRICK, Freight Traffic Mgr., P. & L. E. R. R. Co., Pittsburgh, Pa.  
 P. W. HEPBURN, Sales Engineer, Gulf Oil Corporation, Pittsburgh, Pa.  
 C. W. TRUST, Asst. Traffic Mgr., U. S. Steel Corporation Subsidiaries, Pittsburgh, Pa.

## PAST PRESIDENTS:

|                        |                                  |
|------------------------|----------------------------------|
| *J. H. McCONNELL.....  | October, 1901, to October, 1903  |
| *L. H. TURNER.....     | November, 1903, to October, 1905 |
| *F. H. STARK.....      | November, 1905, to October, 1907 |
| *H. W. WATTS.....      | November, 1907, to April, 1908   |
| *D. J. REDDING.....    | November, 1908, to October, 1910 |
| *F. R. McFEATHERS..... | November, 1910, to October, 1912 |
| *A. G. MITCHELL.....   | November, 1912, to October, 1914 |
| *F. M. McNULTY.....    | November, 1914, to October, 1916 |
| *J. G. CODE.....       | November, 1916, to October, 1917 |
| *D. M. HOWE.....       | November, 1917, to October, 1918 |
| *J. A. SPIELMAN.....   | November, 1918, to October, 1919 |
| H. H. MAXFIELD.....    | November, 1919, to October, 1920 |
| FRANK J. LANAHAN.....  | November, 1920, to October, 1921 |
| *SAMUEL LYNN.....      | November, 1921, to October, 1922 |
| *D. F. CRAWFORD.....   | November, 1922, to October, 1923 |
| *GEO. D. OGDEN.....    | November, 1923, to October, 1924 |
| A. STUCKI.....         | November, 1924, to October, 1925 |
| *F. G. MINNICK.....    | November, 1925, to October, 1926 |
| G. W. WILDIN.....      | November, 1926, to October, 1927 |
| E. J. DEVANS.....      | November, 1927, to October, 1928 |
| W. S. McABEE.....      | November, 1928, to October, 1929 |
| E. W. SMITH.....       | November, 1929, to October, 1930 |
| LOUIS E. ENDSLEY.....  | November, 1930, to October, 1931 |
| *JOHN E. HUGHES.....   | November, 1931, to October, 1932 |
| F. I. SNYDER.....      | November, 1932, to October, 1933 |
| C. O. DAMBACH.....     | November, 1933, to October, 1934 |
| R. H. FLINN.....       | November, 1934, to October, 1935 |
| R. P. FORSBERG.....    | November, 1935, to October, 1936 |
| E. A. RAUSCHART.....   | November, 1936, to October, 1937 |

\*—Deceased.

Meetings held fourth Thursday of each month except June, July and August.

## PROCEEDINGS OF MEETING

MARCH 24, 1938

The meeting was called to order in the Fort Pitt Hotel at eight o'clock p. m., with President G. M. Sixsmith in the Chair.

Registered attendance 281, as follows:

### MEMBERS

|                         |                      |
|-------------------------|----------------------|
| Adair, V. B.            | Cruikshank, J. C.    |
| Adams, Frank W.         | Dambach, C. O.       |
| Ambrose, W. F.          | Davis, Charles S.    |
| Ames, L.                | Dean, E. E.          |
| Bagaley, W. W.          | Dempsey, A.          |
| Baker, W. E.            | Dixon, C. P.         |
| Balla, J. A.            | Durell, W. A.        |
| Balzer, C. E.           | Eaton, Fred'k. H.    |
| Barr, H. C.             | Edwards, Walter      |
| Beitsch, George F.      | Emery, E.            |
| Beltz, J. D.            | Evans, Charles S.    |
| Bender, H. P.           | Evans, Dave          |
| Berg, Karl              | Eysmans, J. L., Jr.  |
| Berg, Max               | Fair, J. M.          |
| Bishop, H. G.           | Falkenburg, R. E.    |
| Black, C. R.            | Fike, J. W.          |
| Britt, T. E.            | Finegan, T. A.       |
| Bryant, L. J.           | Flinn, R. H.         |
| Buffington, W. P.       | Flynn, F. E.         |
| Burel, W. C.            | Forsberg, R. P.      |
| Burk, G. C.             | Foster, F. L.        |
| Button, L. R.           | Furch, George J.     |
| Buzzerd, J. P.          | Galbraith, James R.  |
| Callahan, D. E.         | Geiser, W. P.        |
| Carmody, J. J.          | Gilbert, William J.  |
| Carroll, D. C.          | Gillespie, J. Porter |
| Carter, E. D.           | Goda, P. H.          |
| Campbell, F. R.         | Golden, A. B.        |
| Cavanaugh, T. J.        | Goldstrom, G. E.     |
| Chaffin, H. B.          | Goodwin, A. E.       |
| Cherry, D. C.           | Gross, John          |
| Chipley, G. R.          | Grove, C. G.         |
| Clardy, W. J.           | Groves, W. C.        |
| Clokey, John            | Hagan, H. F.         |
| Clowes, W. K.           | Haller, Nelson M.    |
| Colbert, J. T.          | Hamilton, W. H.      |
| Condon, William H., Jr. | Hance, R. H.         |
| Conway, J. D.           | Hansen, William C.   |
| Crawford, Burt H.       | Hassler, E. S.       |

|                        |                      |
|------------------------|----------------------|
| Haupt, H. H.           | McHail, J. L.        |
| Hausemann, R. E.       | McHugh, C. A.        |
| Hayward, C.            | McIntyre, R. C.      |
| Heer, Walter           | McKinley, John T.    |
| Hemma, Charles H.      | McKinstry, C. H.     |
| Hepburn, P. W.         | McKinzie, E.         |
| Herrold, A. E.         | McLaughlin, H. B.    |
| Hess, Charles A.       | McPherson, A. R.     |
| Hilstrom, A. V.        | McTighe, B. J.       |
| Holbrook, E. L.        | Nagel, James         |
| Holmes, E. H.          | Nathan, W. S.        |
| Holmes, J. R.          | Nelms, H. J.         |
| Honsberger, G. W.      | Nichols, Samuel A.   |
| Hoopes, R. E.          | Paisley, F. R.       |
| Hunt, John F.          | Peirce, W. B.        |
| Hunt, Lawrence,        | Pitcher, C. C.       |
| Jakovac, Victor P.     | Pollack, H. J.       |
| Jarres, F. A.          | Posteraro, S. F.     |
| Johnson, J. W.         | Purchard, Paul       |
| Kelly, L. J.           | Rau, W. R., Jr.      |
| Kentlein, John         | Reagan, Henry V.     |
| Kirby, D. D.           | Roberts, E. L.       |
| Klingensmith, W. S.    | Robertson, A. S.     |
| Knable, G. Elkins      | Rushneck, G. L.      |
| Kroen, Vincent         | Ryan, D. W.          |
| Kroske, J. F.          | Ryan, Frank J.       |
| Lanahan, Frank J.      | Schadt, A. D.        |
| Langfitt, George F. P. | Schako, E. J.        |
| Larson, W. E.          | Schiller, John       |
| Lewis, Benjamin,       | Schrecongost, C. P.  |
| Lincoln, R. B.         | Seltman, O. W.       |
| Livingston, W. C.      | Sersch, J. G.        |
| Long, R. M.            | Sheffer, R. W.       |
| Longdon, C. V.         | Shellenbarger, H. M. |
| Longstreth, W. L.      | Sheridan, T. F.      |
| Loucks, W. V.          | Shields, J. T.       |
| Lowe, William T.       | Shull, C. O.         |
| Lowry, William F., Jr. | Sixsmith, G. M.      |
| Matchett, H. K.        | Smith, G. M.         |
| Mayer, L. I.           | Smith, L. H.         |
| Millar, C. W.          | Smith, Robert B.     |
| Miller, J. B.          | Staats, Kenneth A.   |
| Misner, George W.      | Stack, John E.       |
| Mitchell, W. S.        | Stamm, Bruce B.      |
| Monk, J. Thomas        | Stamm, J. Duncan     |
| Morgan, Homer C.       | Stevenson, H. G.     |
| Morris, J. D.          | Stocker, H. F.       |
| Murphy, D. L.          | Stoffregen, Louis E. |
| Murray, Stewart        | Stucki, A.           |
| McCarty, J. G.         | Stype, W. G.         |
| McCormick, E. S.       | Sutherland, Lloyd    |



Swank, W. E.  
 Swope, B. M.  
 Taylor, H. D.  
 Taylor, J. T.  
 Ternent, H. J.  
 Teskey, Dr. W. J.  
 Thomas, H. N.  
 Tracey, J. B. A.  
 Triem, W. R.  
 Tryon, I. D.  
 Tyler, B. W.  
 Van Horne, C. F.  
 Van Woert, F. E.  
 Vollmer, Karl L.  
 Walter, E. R.

Walther, G. C.  
 Walton, W. K.  
 Welton, A. A.  
 West, Troy  
 Wheeler, C. M.  
 Williams, D. L.  
 Williams, Homer O.  
 Wilson, James R.  
 Woodings, Robert T.  
 Woodward, R. P.  
 Wright, John B.  
 Wyke, J. W.  
 Yarhouse, W. T.  
 Zell, H. A.  
 Zoog, H. J.

## VISITORS

Baker, C. H.  
 Boli, R. F.  
 Britt, Thomas E., Jr.  
 Cooper, J. P.  
 Cotton, C. S.  
 Dankmyer, F. C.  
 Davis, William B.  
 Dean, G.  
 Dixon, J. M.  
 Eisele, H. G.  
 Elliott, James M.  
 Elliott, N. H.  
 Elrick, H. N.  
 Engel, H. A.  
 Federlein, J. G.  
 Godard, C. L.  
 Goldstrom, Walter  
 Grance, H. J.  
 Grant, George M.  
 Hassler, E. G.  
 Hess, R. A.  
 Hoora, M. W.  
 Hufnagel, Edward A.  
 Kelly, L. J., Jr.  
 Kouche, N. J.  
 Laird, G. R.  
 Lewis, S. B.  
 Love, J. R.  
 Lucas, C.  
 Marshall, L. L.  
 Miller, C. J.  
 Miller, Earl  
 Miller, W. Edward

Miller, John S., Jr.  
 Mullett, Dan  
 McConville, J. J.  
 McKinley, W. J.  
 McKinstry, Clair M.  
 McQuaide, Thomas A.  
 Nichols, A. B.  
 Oldham, Ronald W.  
 Patton, Charles  
 Phillips, W. H.  
 Reagan, Philip H.  
 Rhoads, Charles G.  
 Rhoads, F.  
 Robinson, H. J.  
 Rodkey, C. C.  
 Rose, E. J.  
 Ryan, David J.  
 Schmid, H. W., Jr.  
 Schmitz, William W.  
 Scott, R. J.  
 Sheppard, G. B.  
 Sixsmith, James  
 Staats, W. A.  
 Stinchcomb, R. G.  
 Thomas, M. F.  
 Thompson, W. E.  
 Thorns, Walter W.  
 Urban, C. E.  
 Van Wormer, G. M.  
 Van Wormer, L. R.  
 Vollmer, H. J.  
 Vollmer, Paul F.  
 Vollmer, W. K.

|                      |              |
|----------------------|--------------|
| Walther, G. W.       | Will, Adrian |
| Watterson, Thomas A. | Wilson, Ted  |
| Wright, John M.      |              |

PRESIDENT: May I have your attention, please, gentlemen. While our membership is assembling we have a little entertainment that we will present at this time and I have been asked to request, because of the age of these boys, that during this entertainment they not be embarrassed by any noise. This entertainment will be presented by the Pal Trio—Don, ten years old; Bill, thirteen, and Harry, thirteen. They will be accompanied by Mr. G. E. Goldstrom who has also coached these boys along to their present proficiency. Mr. Goldstrom is not only a member of this club, but he is also shop draftsman of the Pittsburgh and West Virginia Railroad. I now present to you Mr. Goldstrom and the "Pal Trio".

(An excellent entertainment was rendered at this point by the Pal Trio and Mr. Goldstrom, the boys singing several songs with perfect harmony and yodeling, while Mr. Goldstrom accompanied them playing the guitar. The entertainment received enthusiastic and prolonged applause.)

PRESIDENT: Mr. Goldstrom, and you three boys, may I express the appreciation of the Railway Club of Pittsburgh for this splendid presentation. For the benefit of any late comers may I say that this entertainment has been presented by Mr. Goldstrom, one of our members and shop draftsman of the Pittsburgh and West Virginia Railroad, and his three boys—Don, ten; Bill, thirteen, and Harry, thirteen years old. By the way, without any thought of discrimination, I would like to call your attention to the fact that Don, the tow-headed boy, ten years old, is Mr. Goldstrom's son.

Gentlemen, our regular meeting will now come to order, please. The roll call is, as usual, dispensed with because of the registration cards which have been presented at the door. We will, likewise, dispense with the reading of the minutes of the preceding meeting because the minutes of that meeting are now in the course of preparation in pamphlet form and will be distributed in due time. Mr. Conway has asked me to express regret for the delay in connection with the distribution of the proceedings of the last meeting because of some delay in securing the approval of the presentation

by the chief speaker on that occasion. Many of you will recall that it had to do with some intricate and important matters.

We will now hear from the Secretary.

SECRETARY: Mr. President, and gentlemen, we have the following proposals for membership:

Eysmans, J. L., Jr., Assistant to the President, Pittsburgh Terminal Coal Corporation, Wabash Building, Pittsburgh, Pa. Recommended by C. O. Dambach.  
Falkenburg, R. E., Representative, Paige-Jones Chemical Company, 2049 Lincoln Way East, Massillon, Ohio. Recommended by H. B. Chaffin.  
Garroway, J. M., Sales Engineer, The Electric Storage Battery Company, Union Trust Building, Pittsburgh, Pa. Recommended by J. D. Conway.  
Halberg, E. J., Vice President, Pittsburgh & Shawmut Railroad Company, Kittanning, Pa. Recommended by J. T. Colbert.  
Hunt, John F., Assistant Master Mechanic, Pennsylvania Railroad, 1325 Milton avenue, Swissvale, Pa. Recommended by G. M. Sixsmith.  
Klingensmith, W. S., Clerk, Jones & Laughlin Steel Corporation, 364 South Atlantic Avenue, Pittsburgh, Pa. Recommended by G. M. Sixsmith.  
Langfitt, George F. P., First Assistant District Attorney, Allegheny County, Berger Building, Pittsburgh, Pa. Recommended by J. D. Conway.  
Morris, J. D., Division Engineer, Pennsylvania Railroad, Pittsburgh, Pa. Recommended by C. M. Wheeler.  
Murphy, D. L., Salesman, Parke, Davis & Company, 142 N. Main Street, Greensburg, Pa. Recommended by G. M. Sixsmith.  
Smith, Walter, Manager, Western Railroad Division, Vanadium Corporation of America, First National Bank Building, Chicago, Ill. Recommended by R. H. Flinn.

PRESIDENT: If any of the gentlemen whose names have just been read are here tonight, I would just like to say that we anticipate favorable action on the part of the Executive Committee and will take advantage of this opportunity to welcome them as members of this club. We hope that your connection with this organization will be as beneficial to you as we think it will be and that you will feel well repaid for having become a member of the Railway Club of Pittsburgh.

May I take advantage of this opportunity also to extend a word of greeting to any guests who may be here tonight. We are always glad, as you very well know, to have guests attend our meetings. We want our guests and those members who bring guests to feel that they are welcome and that we hope their attendance will be found to be well worth while. Incidentally, it is very encouraging to us to note that among the names the Secretary has just read as applicants for new members in our organization there are several who were guests at our last meeting.

Are there any other announcements, Mr. Secretary?

SECRETARY: One of the unpleasant things that we find in our gatherings is to announce the death of some

member of our club. Mr. J. L. Armstrong, foreman, P. P. and Electric, Pennsylvania Railroad, Pittsburgh, Pennsylvania, died November 30, 1937. He became a member of our club on December 19, 1935.

PRESIDENT: An appropriate memorial will, as is customary, appear in the next issue of the booklet of our club. Now, gentlemen, we come to the big moment, so far as this meeting is concerned. As you know, it is our endeavor to bring to you such diversification in the way of subjects and speakers as we can. The subject our speaker will speak on tonight is an outstanding example of something new on the Railway Club Program. When we were making up our lists of subjects and speakers for this fiscal year the thought was expressed that, as this is largely an educational organization and as law enforcement in this country is one of the big issues of the moment, we would do well to learn more about our own great law enforcement agency, the Federal Bureau of Investigation. That suggestion was received with considerable enthusiasm on the part of the Committee and by the attendance here tonight I do not have to ask if you approve the action that was taken on that occasion. It was, therefore, with a little more than usual boldness that we communicated with Mr. J. Edgar Hoover, Chief of the Federal Bureau of Investigation in Washington, and I am very glad to be able to tell you that Mr. Hoover very graciously and unhesitatingly responded and assigned, for this occasion, Mr. H. H. Clegg, Assistant Director of the Bureau. However, it is with some regret but with no desire or with any thought of taking anything away from the speaker who will address you, that I announce that late today Mr. Hoover found it impossible to have Mr. Clegg present on this occasion because of some unusual and important developments in connection with their work. Late this afternoon we received a telegram from him to the effect that he was assigning Mr. L. B. Nichols to represent him at this meeting. It was necessary for Mr. Nichols to leave Washington hurriedly by airplane in order to reach here in time for this meeting and it is only within the very recent hours that he arrived, and I am glad to say that he is here. Mr. Nichols is an inspector and administrative assistant to Mr. Hoover in the Federal Bureau of Investigation. He has worked in various sections of the country on a number of the largest kidnapping cases, bank



robberies, freight car robberies and so forth, and since November, 1935, he has been assigned in Washington. I present to you, therefore, as a worthy substitute for Mr. Clegg, Mr. L. B. Nichols who, as I have said, has just arrived by plane from Washington and will address you on the subject of Law Enforcement. Gentlemen, Mr. Nichols.

## **LAW ENFORCEMENT**

**By LOUIS B. NICHOLS, Inspector and Administrative Assistant,  
Federal Bureau of Investigation, United States Department of Justice,  
Washington, D. C.**

Mr. Chairman and members of the Railway Club of Pittsburgh, I am very happy indeed to bring you the personal greetings of Mr. J. Edgar Hoover, Director of the Federal Bureau of Investigation. In all sincerity he appreciates the interest which has prompted you to consider law enforcement and its many problems at one of your monthly meetings, because law enforcement is one phase of our community life that is essential and every law-abiding citizen should not only be interested in effective law enforcement, but they should be conversant with its many problems in order that they might be in a position to assist in every possible manner. Try as we may, we cannot flee from the ever-present menace of crime. It has reached a pinnacle of appalling height—it lives next door to us and rubs elbows with us—and while it is not exactly a pleasant thought, nevertheless three out of every four individuals living today are potential victims of crime. The lackadaisical attitude on the part of many of our citizens has brought on this crisis. In this civilized nation a serious crime occurred every 22 seconds last year. Every time your watch ticked off a second crime cost this nation \$475.00, until at the end of the year it reached the estimated staggering total of fifteen billion dollars. The cost of crime, terrific as it is measured in dollars and cents, takes on its greatest proportions when figured in terms of human anguish, suffering and sorrow, and it is impossible to erase its indelible imprint left upon its victims and those who are near to them. Last year every 39 minutes, day and night, a homicide was committed, every 1 $\frac{3}{4}$  minutes a burglary occurred, every 12 minutes a serious assault took place, every 40 seconds a larceny was committed, and, believe it or not,

every 2 $\frac{1}{4}$  minutes a car was stolen some place in the United States.

Every citizen of this nation suffers either directly or indirectly from the ravages of those who do not respect the rights of others. Certainly those of you who are engaged in transportation are not immune from crime. Sometimes you get it coming and going. Consider the recent experience of a railroad in the South. A group of youngsters were recruited by a post-graduate and at periodic intervals he dispatched them to a certain point in a Southern State by freight car. At a junction they transferred to another freight and then, after going approximately thirty miles north of the junction, they would connect with one of the fast freights through the South and through the use of ropes and ladders would lower themselves from the top of the car to the car doors and throw out cigarettes and merchandise along the road. Their ingenuity is attested by the fact that they would then pick up the merchandise and at a certain point where other trains usually stop, would load this on a flat car and transport it to the place where they disposed of the goods. Thus, it can be seen that that particular railroad got it coming and going.

As we view crime and its many problems, we must endeavor to view it as a reality, for crime is not a mythical thought that exists only in the minds of some law enforcement officers. It is a condition we must recognize and treat from a sane and common-sense viewpoint. Law enforcement officers who have spent their lives in endeavoring to protect society from coast to coast have reached the conclusion that the time proven deterrents to crime are sure detection, swift apprehension and certain punishment. It is essential that the four million, five hundred thousand individuals in this nation with records of criminal tendencies be met if society is to be protected from this hoard of law-breakers. Society must look to its only duly constituted representatives, the law enforcement officers of America, for protection. Peace officers everywhere represent society and daily are sacrificing their lives in order that the honest, law-abiding citizens may be protected. Thus, Mr. Hoover was pleased when he received your very kind invitation several months ago to address your body, and I want to say right now that were it not for other pressing commitments that have long been

made he would have been with you tonight, and he asked me to tell you how deeply he regrets his inability to be here.

In 1924 this nation witnessed the dawn of a new era in law enforcement, for it was in that year that the then Attorney General of the United States, now a Justice of the United States Supreme Court, the Honorable Harlan F. Stone, appointed a young man scarcely 29 years of age to head the Federal Bureau of Investigation. J. Edgar Hoover accepted that appointment on the condition that he be given a free hand and that politics should not dictate the appointment of his men, and on the further condition that the men would be rewarded only upon the basis of merit. These conditions, I am happy to say, have been lived up to since 1924, and you may rest assured that as long as Mr. Hoover is Director of the Federal Bureau of Investigation, insofar as the jurisdiction of the FBI may extend, the citizens whom it seeks to protect will be served by the untiring efforts of a group of well-trained, sincere and conscientious men, working under the leadership of the greatest law enforcement officer and one of the greatest organizers and patriotic citizens this nation has ever known. He has sacrificed everything that the people of our nation might be given a greater measure of protection and he has dedicated every ounce of his energy to the improvement of law enforcement, not only insofar as the FBI is concerned, but in order that law enforcement throughout the nation might be benefitted, because, after all, law enforcement is a cooperative enterprise. Certainly law enforcement has no place for prima donnas. Its success or failure will be determined by its unity of action, and while the Federal Bureau of Investigation is essentially a "we" enterprise, nevertheless its success and its achievements have been due solely to its great dynamic force found in the personality and in the leadership of its Director.

In successfully combating crime, duly constituted law enforcement agencies must not only co-operate, but at the same time they must have the wholehearted support, interest and co-operation of the citizens in the communities in which they operate, and on behalf of the Director and the personnel of the FBI I want to express at this time our heartfelt appreciation for the splendid support and co-operation that exists between the various investigative and detective branches of the railroads in this particular area. It has been our good



fortune on innumerable occasions to work shoulder to shoulder with railroad Special Agents and it has been a source of inspiration for the Agents of the Federal Bureau of Investigation working in its Pittsburgh Division to enjoy not only the friendship, but the confidence of such men as Captain Sersch and the other excellent officers who represent your railroads in this particular district.

Like every other phase of human activity, the success of law enforcement must ultimately depend upon its personnel, for there is nothing mysterious to successful crime detection, although we must admit that the amateur sleuth invariably thinks of disguises, wire-tapping and shadow work as constituting an important phase of successful crime detection. As a matter of fact, one of the first things that Mr. Hoover did after he became Director of the FBI was to abolish a practice which was followed at that time, namely the memorizing of elaborate blueprints that had been prepared designed to teach new men how to shadow individuals in every possible situation. Now everybody knows that all one need do if he suspects that he is being followed, is to back track a couple of times and then if the individual whom he suspects is still with him, he can rest assured that this is more than a coincidence. Likewise, the Director has insisted and demanded that Special Agents of the FBI live up to the highest possible ethics in the new profession of law enforcement, and for that reason so-called bird dog investigations and fishing expeditions have no place in the work of the Federal Bureau of Investigation. Before the men of the FBI function, there must be some definite indication that there has been a Federal violation. Disguise is always the first step taken by the detective of fiction, and you will undoubtedly recall, if you are addicted to reading the Pulp Magazine, that whenever an officer is assigned to a case, one of the first things he does is to pull out a make-up kit and proceed to disguise himself, completing his operation by whisking out a set of false whiskers from his rear pocket and then fooling nobody in the world but himself. It is true that at times officers must resort to pretexts, but it has been our experience that the best possible pretext is to place a man in surroundings that are perfectly natural to him, and with that thought in mind Mr. Hoover saw to it that the Special Agents of the FBI were well trained and well equipped



before they were eligible for appointment, and shortly after his appointment he enacted a rule that is in force today that applicants to be eligible for appointment must be between the ages of 23 and 35 and they must be graduates of a recognized law school or accounting school, or have had extensive investigative and law enforcement experience. Please do not think for one moment, however, that we believe that just because a man is a college graduate he will be peremptorily qualified to discharge the duties of a law enforcement officer. Certainly such is not the case because all of us know, unfortunately, that there are such things as educated ignoramuses. Given the proper educational background, training and a proper sense of balance, however, the man who has had the advantages and the experience of a college education will be much better qualified to discharge his duties than one who has not had this training.

Frequently Mr. Hoover receives inquiries asking him to describe a typical G-Man. This is impossible, because there is no such thing as a typical G-Man. They come from all walks of life and every section of the country. They have attended over 250 colleges and universities and prior to entering the service of the FBI they have earned their livelihood in every phase of human endeavor. In checking over the past experience of the Agents we find that they are skilled in 38 different trades, have worked in 21 different industries, 38 businesses and 17 sciences and professions, and, if necessary, we can find one or more Agents in the service who can speak any one of 20 different languages. They have excelled in over 18 different sports. We find among our ranks writers, cowboys, musicians, syncopators, veterinarians, pharmacists, metallurgists, radio announcers, economists, and, for good measure, we even have a couple of hypnotists in our organization, although I do not recall of any instances where their past experience has been called into service.

Adaptability is a necessary requisite if the career of any Special Agent is to be successful. He cannot be experienced in too many fields. In more than one instance cases have been solved because the men of the FBI were experienced in numerous fields of endeavor and in more than one instance the lives of the Agents have been saved because of their ability to think fast and then function perfectly. I recall, for instance, the case of a young Agent who was seeking a

badly wanted fugitive in one of our Southern States. This fugitive lived on the top of a mountain. The Agent parked his car at the foot of the mountain and after walking about six miles up the mountain was greeted by an old mountaineer who pointed a long barreled rifle out of the window at him. This Agent was then informed that he would repose peacefully forevermore in the family burial ground, because strangers were not favored in "that thar" vicinity. The Agent was a versatile chap and engaged in a conversation with the old mountaineer. He went into the house—all the time the mountaineer's rifle was pointed at him—and in a room he saw an old organ. On the top of that old broken down organ he saw a fiddle. He walked over and picked it up, and then drew the bow over squeaky strings. First he played "Turkey In the Straw", then "The Old Irish Wash-woman", "Arkansas Travel", "Carry Me Back to Old Virginia", after which he started improvising. For two hours he played, and then his imagination was exhausted and he played the one number that he had been saving "The End of a Perfect Day". He laid the fiddle down and looked at the old mountaineer, who stated he was not "such a bad fellow". The Agent had actually warmed the heart of the mountaineer, who then told him he should spend the night with him in his cabin and at the next term of court he would have his son, who was a fugitive, surrender, which he actually did. That particular Agent has since said that if those strains that came from that old fiddle, under the inspiration of the moment, could have been recorded, Mozart and all the other great composers of history would have indeed played second fiddle to him. To say the least, the life of a Special Agent never becomes monotonous and their assignments at times are a bit unusual.

A few years ago a financial institution that was located throughout the entire South collapsed. Within ten days after its failure 86 small banks in two Southern States closed their doors. Aggregate losses totaled around ten million dollars. At least six persons committed suicide as a result of these failures. The President, three Vice-Presidents and the Treasurer of this institution were indicted for the fraudulent manipulations which had shaken the financial structure of the South. All but the President were convicted and incarcerated in a Federal Penitentiary. Effort after effort was made to

bring the President to trial and each time the case was set on the calendar he reported seriously ill. He later entered a sanitarium, but the Federal District Court becoming suspicious, called upon the FBI to ascertain his real condition. A Special Agent, through the co-operation of a brother Agent, gained admittance to the sanitarium on the grounds that he was suffering from melancholia. After being under observation for a couple of weeks the ailing President struck up an acquaintance with the Agent, who was thus able to observe his activities, which he recorded each day in a diary which he carefully hid under the sheets of his bed. One day a guard caught him writing and asked for the diary containing the minute information as to when and with whom the bank President frequently left the sanitarium in a most irregular manner—certainly he did not act like a sick man who was unable to face the bar of justice. When the Agent was approached by the guard, he summoned all his ingenuity and worked himself into a frenzy. The guard ran for help—a wild man was loose—and when he returned with reinforcements he found the Agent scribbling meaningless words on pages of paper in a most docile manner. The diary, of course, had been carefully hidden. The other guards cast many taunting remarks at their associate who had become so excited over an inmate who had gone crazy but was then as peaceful as a lamb. This is the only instance I know of where an Agent has had to act like a crazy man, although it was necessary for him to complete his assignment and that was the only way out.

Some of the Agents have had rather amusing experiences, particularly those with linguistic ability. There was the Agent, for instance, who was taking a gang of bad actors to jail following a series of large raids. The individuals under arrest conversed freely in their native tongue. They were discussing their alibis and what each would say when arraigned. When they arrived at the jail the Agent said good-bye to them in their native tongue and briefly reviewed their conversation. Needless to say, when arraigned in court they entered pleas of guilty.

The Federal Bureau of Investigation was first organized in 1908, and furnished the Department of Justice with a permanent investigative agency. Its facilities since 1908 have been greatly expanded to meet new conditions which have



arisen by reason of the rapid changes during the past twenty years. It has investigative jurisdiction over all types of Federal offenses, but as a matter of policy, it limits its activities to those offenses not already assigned to other Governmental Agencies, either by Congressional Enactment or by agreement. Its investigations range from complicated fraud cases down to enforcing the penal provisions of the Migratory Bird Act, and so, Mr. President, when you are in Point Chautauqua this Fall before you go duck hunting be sure you stop at the Post Office and secure your permit otherwise "The G-Men will get you if you don't look out".

You members of the Railway Club are probably more familiar with the activities of the FBI in connection with kidnapping, bank robbery and some of the other more spectacular types of offenses. These, however, constitute but a portion of our work. At the present time, we are actively investigating nine thousand criminal cases, but unfortunately, because of a shortage of personnel, there are six thousand cases that are unassigned, and all the time witnesses are separating or forgetting and evidence is being lost, yet the men of the FBI are working all the way from twelve to eighteen hours a day, and it is not uncommon, in cases of major importance, to work for four and five days without sleep. Every employee of the FBI, from the Director to the lowest messenger, is a crusader at heart and practically every night in the week, should you be in Washington and drive down Pennsylvania Avenue, you will find the lights burning in Mr. Hoover's office late at night and sometimes all night. He frequently calls his assistants on the dictograph at eleven or eleven-thirty to order them home, yet he will stay all night. Criminals have no consideration whatsoever for our time and once they go on a rampage we would be violating our trust if we were to sleep before they were brought to justice. In these emergency matters expediency is of prime importance. Take, for instance, the case of John Henry Seadlund, the kidnapper and murderer of Mr. Charles S. Ross. For nearly three and one-half months Agents all over the country were following down every lead that came to their attention. Mr. Hoover was personally supervising this case, as is his custom in all cases of major importance. In his office in Washington he correlated all leads and coordinated and directed the activities of the Agents along the lines



which would be most productive of results. While the kidnapping occurred in Chicago, the entire United States was our field of activity. The ground work was laid and then came the break. Ransom money began to show up in various sections of the nation. Seadlund was followed from Chicago to the East, then to the South and then to California, and out of a group of some 40,000 persons Special Agents of the FBI arrested John Henry Seadlund, and all that they had was a physical description of the individual who passed the ransom money at the ticket window. Because of the importance of the case the Director immediately left for the West Coast by plane and for six days and six nights he worked with a squad of Agents, which resulted in the location of the kidnapping hide-out and the recovery of a good portion of the ransom money.

Seadlund told Mr. Hoover some rather interesting facts about his life, which are indicative of the criminal mind. For instance, Seadlund and his pal, James Atwood Gray, whom he also murdered, had made up a list of individuals whom they considered kidnapping. Gray wanted to kidnap Dizzy Dean. Seadlund, however, said Dizzy Dean was not worth enough to the Cardinals and thought it would be better to get some other player. Mr. Hoover asked him how he got started in his life of crime. He told Mr. Hoover an amazing story of his graduation from high school and how he started in holding up gas stations. He then stated "I didn't do it so much for the money involved, but because of the fun I got out of it". There, gentlemen, if I may take rest for just one moment, is one of the weak points in our community life, whether it be rural, urban or metropolitan. We have youth and crime, not because of their anti-social tendencies, but because society has failed to harness their basic desires of human nature and direct them along creative lines. Undoubtedly many of you know of some youngster who has become immeshed with the forces of law and order. Why? Was it because he was in the quest of new experiences, response, recognition or security? Would not it have been much better to have provided that youngster with an opportunity to satisfy his natural instincts? Public enemies do not become such overnight. Every degree of criminality is relative yet cumulative, until the criminals reach the point where nothing else matters but the maintenance of their own

fugitive status, which requires plunder and ravage to avoid apprehension. The criminal element develops a certain outlook toward life that is anything but worthy. They think only of themselves and how they can avoid apprehension. Indeed, Mr. Hoover has made a great contribution to the cause of law and order in recent years because of his fearlessness and courage in referring to criminals in terms which are descriptive of their real character. Ask any experienced law enforcement officer who has spent his life dealing with criminals face to face, not like so many of the sentimental sob-sisters who see them only behind bars, and he will tell you that the criminal, once he has embarked upon a criminal career, is more vicious and more obnoxious than any rat that ever scampered to his hole upon the approach of someone, or who gnashed when cornered.

Special Agents of the FBI have obtained results, not through any hocus-pocus, but through persistent and untiring efforts. At times they have been confronted with the necessity of grasping at the faintest semblance of a clue. Take the case of "Doc" Barker and Alvin Karpis, for instance. They had been identified as being the kidnappers of Edward G. Bremer, and, with their gang had collected \$200,000.00 in ransom. The gang was trailed from one section of the country to another. Truly, the heat was on. Karpis became incensed with hatred for the Federal Bureau of Investigation, and planned an elaborate scheme to exterminate some of its members. He planned, first, to go to New York and there kill the Special Agent in Charge; then he would dash to the West Coast and kill the Special Agent in Charge in Los Angeles; then hurry East, stopping at Chicago and murdering the Special Agent in Charge there, and then he planned to come to Washington and "get Mr. Hoover". From Pennsylvania he posted a letter to the Director advising him that very likely he would be in Washington soon and would enter the Department of Justice and machine-gun the Director, Mr. Hoover. Mr. Hoover, however, does not frighten very easily, and later, following a hurried trip to New Orleans, Mr. Hoover met Karpis face to face, when he personally took him into custody and Karpis, the braggart, quivered and shook like one who had lost control over his volition. In rounding up the gang, an apartment house was raided in Chicago. Slim Grey, one of the mobsters, was killed while

resisting arrest after he had come out of the back door of the apartment house with a .351 automatic rifle firing full blast. In that apartment house the Agents found a map. A few pencil marks appeared around several lakes in Central Florida. Another individual who was taken into custody in the apartment house innocently related that as a pastime Freddie Barker, Harry Campbell and Karpis hunted an alligator named "Joe" who was supposed to have frequented the section of the country where they were living. That was enough to start a special squad to Florida by plane. In a methodical manner they started questioning the natives about alligators, and particularly about an alligator named "Old Joe". Finally they met an old Floridian who recalled an alligator named "Joe" who had been in the vicinity of Ocala, Florida. Soon "Ma" and Fred Barker were located and after a fierce gun battle, their lifeless forms were moved from the hide-out and their criminal careers had been brought to an end.

It has been our good fortune in case after case to co-operate and work with Railroad Special Agents and the splendid spirit of co-operation that has always existed between the Railroad Special Agents and the Federal Bureau of Investigation has been a source of great gratification, because in dealing with organized rings of box car thieves, you are dealing with shrewd and cunning types of criminals—individuals who have followed this particular type of racket for years. We all wish that more often we could have the pleasure of working with Railroad Special Agents, though fortunately for the merchandise being entrusted to your care, and through the excellent work that has been done, there has been a gradual decline in larcenies from interstate shipments. This cannot be said, however, for other types of offenses.

Crime in 1937 showed a marked increase and crime in 1938 likewise will show a marked increase unless the public and everybody concerned with decency marshals their forces to meet the army of crime in a successful encounter. There can be no better investment in any community than that made by its inhabitants in good law enforcement. It pays good dividends, not only in increased protection but in dollars and cents. Last year for every \$1.00 that was spent in maintaining the operations of the FBI \$7.36 was saved the tax-



payers of the United States in savings effected the Government, property recoveries and fines imposed in cases coming under the investigative jurisdiction of the Federal Bureau of Investigation.

While its investigative activities are most interesting, nevertheless they do not represent the entire scope of the functions of the FBI, for this Bureau has developed, under the leadership of the Director, along co-operative lines and it stands today as the service agency of all law enforcement. One of the great progressive steps made in combating the criminal was the introduction of fingerprints as a means of identification. Down through the pages of history mankind has always had some method of identifying its outcasts and criminals. In Ancient India, for instance, they cut off the ears and chopped off the noses of their criminal element, while in Ancient Rome the mercenaries and criminals were branded, and then with the advent of photography detectives developed a camera-like eye which would permit them to view the muggs in a rogues gallery and then go out and pick up anybody whose photograph they had ever seen. Needless to say, chaos would reign if we did not have a better means of identification today. This is something that we need not worry about, however, because nature has providentially provided that the papillary ridges upon the bulbs of our fingerprints are characteristic and distinct to each individual. No two persons have ever been found whose fingerprints are the same, and through the organization of the Identification Division of the FBI a few months after Mr. Hoover was appointed Director, which was the realization of his great dream for more effective law enforcement, criminals may cross the continent and change their names hundreds of times, but still they cannot escape the revelation of their true identity once their fingerprints have been placed on file, and the Identification Division of the FBI is today an encyclopedia of "Who's Who" in crime. Starting with a nucleus of 810,000 fingerprints the Identification Division files of the Federal Bureau of Investigation now contain over eight and one-half million sets of fingerprints, and they are so filed that within five minutes' time an incoming set of impressions can be positively identified if a similar set of impressions is on file. Fugitives are being apprehended who just a few years ago would have been free and unknown forever. Over six hundred times



each month fingerprint impressions of criminals arrested for minor infractions are identified with the fingerprints in the Bureau's files bearing wanted notices frequently of individuals wanted for murder and other serious crimes, and in this manner justice is triumphing over the nomadic tendencies that are so characteristic of the lawless element.

Less than six years ago the Technical Laboratory of the FBI was organized in order to make available not only to Special Agents of the Federal Bureau of Investigation but to law enforcement agencies throughout the country, the advantages and the assistance of scientific aids in their criminal investigations. Crime detection today is in its infancy, yet its science has progressed to the point where the white coat scientist with his test tubes, his microscope, his refractor and his spectrograph and other instruments is solving crime in a routine manner, which would have startled the imagination of such famous detectives as Sherlock Holmes a few years ago. A blood stain, a hair, a spent bullet jacket, a piece of fibre, dirt on a pair of shoes, traces of paint on a pair of trousers, and hundreds of other infinitely small clues have proved to be the turning point in cases, and the cold facts of science have established guilt or innocence beyond any question of doubt. Given the proper specimens to work with, there is no field today in scientific crime detection wherein the scientist cannot step in and help investigating agencies to positively identify physical bits of evidence. Indeed a new day has dawned in law enforcement, yet despite the progress that has been made we are still confronted with a crisis. Law enforcement, through efficient operations unhampered by venal politicians, can do much to bring about further progress in meeting the criminal element. To really succeed, however, to the fullest possible extent, it is necessary that all the forces of decency be marshaled on the front of crime prevention to stop the further recruitment of crime. While only 18% of all persons arrested last year were under 21 years of age, nevertheless that 18% accounted for 13% of the murderers arrested, 28% of the robbers arrested, 42% of the burglars arrested, 51% of the car thieves arrested and 30% of the thieves arrested. What is the answer? There is but one answer, and that is that this condition of lawlessness constitutes a crisis and calls for the mobilization of decency on every front, and every town and hamlet, in order that the enemy on our soil might be stopped.

This problem of lawlessness surpasses even the fancies of imagination and yet crime is crime—it can be nothing else. While we will probably have crime with us until the end of human emotion and passion, nevertheless its menace can be curbed, and the curbing of that menace is your job as a citizen and my job as a law enforcement official.

I do hope that should you ever visit Washington you will find time to call at the offices of the Federal Bureau of Investigation, and Mr. Hoover has asked me to extend to you his most cordial invitation to visit the facilities of the FBI, because the Federal Bureau of Investigation seeks to protect you in all matters coming under its jurisdiction. It is your servant and we are as close to you as your nearest telephone.

PRESIDENT: Thank you very much, Mr. Nichols.

If you gentlemen are as thrilled as I am after listening to that wonderful presentation of the activities of the Federal Bureau of Investigation you will agree with me that your Subject Committee has made another hit in our March of Progress in the presentation of diversified subjects and interesting speakers.

Mr. Nichols told me tonight an interesting sidelight pertaining to his coming to Pittsburgh this evening. When it was found that Mr. Clegg could not, of necessity, be here, the Director, Mr. Hoover, was considerably exercised and, after assigning Mr. Nichols to come to Pittsburgh and speak to us tonight, and later learning that he had not left Washington immediately, he told him to get on the first plane and get to Pittsburgh at the earliest moment and if he did not arrive for this meeting the whole Bureau of Investigation would be after him and that is a fact.

Now, gentlemen, in a few moments, we will ask one of our able representatives to express adequate appreciation to Mr. Nichols for coming here this evening and to Mr. Hoover for making it possible for Mr. Nichols to be here. I will not attempt that assignment. I will delegate that to a gentleman better qualified than I am to do it. In the meantime, Mr. Nichols has expressed a willingness to answer any questions that you may care to present to him and if you will now ask him any such questions that may occur to you I think Mr. Nichols, in his usual gracious manner, will attempt to answer them.

Are there any questions?

MR. H. H. HAUPT: Mr. President, Mr. Nichols made the statement that if they received in the Federal Bureau of Investigation a set of fingerprints it took only five minutes to identify them.

MR. NICHOLS: Or less.

MR. HAUPT: I think we would all be interested to know the procedure involved.

MR. NICHOLS: Fingerprints are classified according to pattern types on each one of the ten fingers, and this classification, once completed, amounts to nothing more or less than an index number to that set of fingerprints. There are more than eight million five hundred thousand sets of fingerprints in the files of the Federal Bureau of Investigation and our files are broken down into hundreds of sections and each section only contains a small number of fingerprint cards. Once they are classified by pattern and type there are only nine basic patterns and we have experts who know in what section or particular file he can find the fingerprints of any certain classification. About 60% of the fingerprint classifications are according to loops and whorls and we have reached a classification point where it does not take a long period of time because now we have a machine to search at the rate of 475 a minute. When I say we can identify a certain set of fingerprints in five minutes I could say in about three minutes, but am allowing time for any mishap.

MR. HAUPT: I am rather curious about this. I might have criminal tendencies and I am trying to guard myself; are there any characteristics of fingerprints showing criminal tendencies?

MR. NICHOLS: Fingerprints are like an unchangeable signature. They are fixed about three months before birth and remain until death, but do not indicate characteristics or indicate any certain traits that might be expected. The only indication you can receive from studying fingerprints is the fact as to whether the individual is a hard worker; that is, works with his hands, or the absence of that, such as a housewife whose hands are in water all the time and usually the fingerprints smudge. If the fingers are calloused you can always tell that from the fingerprint card.



MR. A. STUCKI: What were Mr. Hoover's qualifications before he became head of the Bureau?

MR. NICHOLS: Mr. Hoover was born in the District of Columbia and attended the public schools in Washington, D. C. Following his graduation from High School he succeeded in securing a job at the Library of Congress and at night attended George Washington University where he was graduated in 1916 with an LL.B. degree, and in 1917 he received his Master's degree in law. He was promptly admitted to the Bar after successfully passing the examination and in 1917 he entered the employ of the Department of Justice. In 1919 his untiring efforts were rewarded by his appointment as a Special Assistant to the Attorney General. From 1919 to 1921 he had the responsible position of handling many important prosecutions for the Government, always with marked success. In 1921 he became Assistant Director of the then Bureau of Investigation. From 1921 to 1924 he was Assistant Director of the Bureau of Investigation. He made a study of law enforcement problems and in those early days dedicated his life to serving his fellow-men by making this country a safer place in which to live. He studied Scotland Yard, the French Surete, The Royal Canadian Mounted Police and American police systems, and from his studies came the ideas which he later planted, and which have borne fruit. In 1924, with the reorganization of the Department of Justice under the leadership of Attorney General Harlan F. Stone, who was called from his Deanship at Columbia University Law School and has since been elevated to the bench of the United States Supreme Court, Mr. Hoover stood out as the logical choice for appointment as Director of the Federal Bureau of Investigation. He accepted this appointment on the condition that politics should not dictate personnel policies and that merit and qualifications should be the determining factors for appointment and for promotion. He immediately put into effect the present personnel policy of high requirements for appointment as a Special Agent and at the same time inaugurated his training programs which today have been studied by officials the world around and which represent one of the most significant trends in the educational world. His special qualifications, outside of education and experience, consist of possessing a mind that is second to none; he has one of the



quickest intellects that I have ever seen; in organizing he is a genius, and he is a man actuated by deep patriotic and religious motives, otherwise he could not have achieved what he has in the face of the many obstacles that have been thrust in his way. His ability has never been tested and above all that he is of impeccable character and his honesty and sincerity of purpose have won for him the admiration and the respect of honest law enforcement officials in every section of the world. Of course, there are the mutterings and the meanderings of small minded persons who have not been able to attain recognition in any legitimate manner who have resorted to muck-raking, but you have never heard even these individuals, suffering from a form of mental halitosis, infer any criticism of his ability, of his judgment, or of his effectiveness. He is a practical man and views the problems which he must solve in a practical manner. Some have referred to him as a criminologist. If the dealing with criminals qualifies a man for that title, then he is preeminently qualified. However, he has forgotten more about crime and criminals than 98% of the individuals who have aspired to that title.

QUESTION: Is any of the truth serum used by the Bureau?

MR. NICHOLS: No, we do not use that. We have the lie detector. We regard it as being in the experimental stage. We regard it as experimental and used for experimental purposes only. We do not use the truth serum in any form whatsoever.

QUESTION: I have been told a good many of our criminals today are young men, about 21 to 23 years old, and it occurred to me, thinking of that fact, and knowing of two young boys who attempted to get away with a crime, whether they are not somewhat trained by moving pictures on how crimes are perpetrated. I do not want to say that they are responsible, but it looks to me as though they have an influence on young minds and may misguide them sometimes.

MR. NICHOLS: It is a very interesting observation.

MR. R. P. FORSBERG: Should each state have a duplicate of the F. B. I. law enforcement?

MR. NICHOLS: I think that should depend on conditions existing in the particular state. Undoubtedly a local law enforcement agency, limited as it is by jurisdictional bounds, is seriously handicapped. County and state law enforcement agencies are likewise handicapped because of lack of authority to go outside of their jurisdictional bounds. That is why we have the FBI. Your question is difficult to answer since there are so many angles that must be considered.

MR. W. S. NATHAN: Is the FBI assigned to one particular case and kept on that until it is finished or do you have several cases to work on?

MR. NICHOLS: Unfortunately our members are carrying nearly twenty cases to each man. We have special details for special types of cases. We have a special squad on a few of the more important kidnapping cases. However, ordinary run of the mine cases are assigned to an agent and he handles them, and in the event there are leads to be followed in other field office divisions, the Agents in the respective offices develop the leads. We do not assign an Agent to a case and let him go from the East Coast to the West Coast, and from the North to the South, unless there are most unusual circumstances. Frankly, I do not know of any cases that have arisen in recent years where that has been done.

QUESTION: Mr. Nichols, what is the total number of Agents in the Bureau?

MR. NICHOLS: We have 672 Special Agents at the present time operating throughout the United States and territorial possessions and 45 field office divisions.

QUESTION: Does the Bureau have investigative work to do within the Government itself?

MR. NICHOLS: Yes, such as frauds against the Government and then too every Special Agent is investigated from the date of his birth until the date the investigation concludes. Mr. Hoover, immediately after he became Director of the Bureau, laid down certain principles. It is a cardinal principle that there must be a distinct indication of a Federal violation before he will investigate.

If there are no other questions I want to again express my appreciation for having been with you.

PRESIDENT: My attention has just been called to the fact that we have, as a visitor here tonight, Mr. George F. P. Langfitt, first assistant District Attorney of Allegheny County. First, I want to take this opportunity of expressing to him our pleasure in having him with us as a visitor tonight and, second, ask him if he will say a few words at this time. (Is Mr. Langfitt in the room?)

MR. GEORGE F. P. LANGFITT: Mr. Chairman, Members of the Railway Club:

I came here tonight with no intention at all of being called upon to speak or address you in any way. I am here as a guest of my friend Mr. Vollmer, Chairman of the Board of Township Commissioners of Shaler Township and a member of your organization. I know from your applause how much you appreciate the remarks of Mr. Nichols in his presentation here. I am happy to say to you that the District Attorney's Office of Allegheny County cooperates to the fullest extent with all federal agencies and especially with the Federal Bureau of Investigation. Everyone who is convicted or pleads guilty to a serious crime in Allegheny County is fingerprinted and photographed. Before sentence is imposed, these pictures and fingerprints are sent to Washington. We always have a prompt reply, although we send a great many every week. We receive the close cooperation and help of that Bureau.

This is quite a change from what used to happen years ago. I have been an assistant district attorney a good many years, and I know that sentencing used to be a hit or miss proposition. Then, a man with a long criminal record might stand before the Court, might be asked if he was ever there before or ever convicted of a crime, and if he said "No", that was the end of it. Now, in every case, the defendant's record is checked with the Federal Bureau of Investigation at Washington, and it doesn't do him any good to say "No", because the Judge has his record right in front of him and knows whether he has been sent to prison before. So, you can see how helpful this is to law enforcement agencies, this fingerprint system.

We have the most modern appliances in our organiza-

tion here in Allegheny County. We have an excellent fingerprint department. We are using every scientific method here that has been mentioned by Mr. Nichols as being used by the Federal Bureau of Investigation. We have used the paraffin test that is used on a person's hands to see if he has fired a gun recently. It may interest you to know that we are trying to keep up with all modern developments from day to day.

I know we cannot express too strongly our appreciation of Mr. Nichols' visit here. I am glad I came and I know everyone is. I for one will want to come back and attend some of your future meetings.

In closing I will tell you a story of a Government agent, during Prohibition days, who was assigned to the enforcement of the Prohibition Law. He was a young man but an excellent officer and was assigned to find a large still down in Kentucky. He meandered through the hills in search of this still and saw smoke coming from behind some trees so he stopped to investigate. He found a small cabin there. He knocked and the door was opened by a little girl about nine years old, who apparently was the only occupant of the cabin. He said to the little girl: "Who do you live with here?" and she said, "With my pappy and brother". He said, "Where are your pappy and brother?" and she said, "My pappy and brother are down below there tending to the still". He said, "Then you have a still here?" She said, "Oh, yes sir, we have the biggest still in the county". He said to the little girl, "I wonder if you will show me where that still is?" She said, "No, I don't believe I can do that". He said, "Come on, and I will give you a dollar if you show me where that still is". She said, "For a dollar I might do that, Mister". He said, "Come on, and let us go there". She said, "Mister, I want the dollar first". He said, "That is all right, when you take me down to show me the still I will give you the dollar when we come back". She said, "No, mister, if I show you where the still is and you go there you are not coming back".

I hope that won't apply to our friend, Mr. Nichols here.

PRESIDENT: Thank you very much, Mr. Langfitt, and you now have the invitation of the Railway Club to visit us frequently if you so desire.



Now, we have another gentleman here tonight who does not come to us in the guise of a visitor. He comes to us in the guise of a member who went away and apparently did not forget to come back. I saw him come in the door. He spoke before this club on one occasion and I think it is only fitting that we extend a greeting to this member who went far away and took the first occasion, when he came back, to visit us at one of our meetings. I am going to ask Bill Triem to stand up.

MR. TRIEM: I am very happy to be here tonight and greet everybody here.

PRESIDENT: I was going to add, Bill, that you came back to Pittsburgh at a very good time. I do not know whether or not you know anything about crime prevention, but would suggest that you look at your fingers.

MR. TRIEM: As a matter of fact I have been looking at my fingers, Mr. Sixsmith, since Mr. Nichols started talking about fingerprints. I do not know whether I would be classified as a housewife or as a laborer.

PRESIDENT: Anyway, Bill, the Club is glad to see you back even if only for a visit and that gives us the thought that members who move away should, when they come back and have an opportunity to do so, visit us on every occasion.

Now, before calling on your Chairman of the Executive Committee, Mr. Lanahan, to express, in adequate language, as only he can do it, the thanks of this organization to Mr. Nichols for his wonderful presentation tonight to Mr. J. Edgar Hoover for making it possible for him to be here, I would like to remind you that the next meeting of the Railway Club of Pittsburgh will be held in this room on the night of April 28th.

Now we will hear from Mr. Frank J. Lanahan.

MR. FRANK J. LANAHAN: Mr. Nichols, your talk has been very interesting. As you dispersed your data, facts and adventure to your discriminating audience, they were conscious of the picture made by those three hopeful boys, who had just preceded you with their happy songs. You who are fathers, and all the others who have had contact with boys, could not help but appreciate that setting. While still fresh in our memory was this scene, and the echo of

the sweet voices rang in our ears, and our hearts comprehended fully the human side, this discerning gentleman with scientific information depicts the marvelous research and knowledge of crime in the Bureau of Federal Investigation, and then proceeds to demonstrate the possibility of the ending of these same bright little boys. Mr. Stucki in his comments may have given a suggestion as to the primary cause. Gentlemen, does it not stir your hearts just to think what those little fellows are up against in the ratio of temptation, assurance of detection and consequent punishment? Mr. Nichols has so ably presented his subject that we cannot help but feel that the work of the Bureau should deter a man of criminal inclinations in the very incipient stages of wrong doing, for the reason that apprehension seems absolutely positive. I believe he said one out of four may be victims.

MR. NICHOLS: Three out of four.

MR. LANAHAN: "Three out of four" that's worse. We are going to continue to have confidence that whatever might happen under ordinary circumstances, by reason of the wide scope and dexterity of Mr. Hoover and his associates in detecting crime, we will be protected from what otherwise might have been our fate. The rapt attention of this audience was a rare tribute to you, Mr. Nichols. Every man here realizes he has had an excellent opportunity for education on a live topic. Incidentally, and I think this is important, you have generated even a higher opinion and a greater respect on the part of your listeners for Mr. Hoover. Was it not delightful to you personally, Mr. Nichols, as you looked into the faces of your audience and saw the concern and interest manifested? I interpret that as love for country and a strong desire to see conditions brought around to the end for which your department is striving. The eagerness of your listeners was an undeniable compliment to the Bureau you represent and you certainly carried on exceedingly well your part. It would be fine if I could use the same words as did our President and Mr. Langfitt when they so effectively expressed their feelings after hearing your discourse. As an alternate, I am going to propose that as an indication of the gratitude and appreciation that everyone here has tonight for your contribution to our enlightenment and enjoyment, we all rise in approval and thanks.

(At this point a rising vote of thanks was given to Mr. Nichols.)

PRESIDENT: Now, gentlemen, a luncheon has been arranged to be served in the Norse room instead of in this room. We have had considerable success in having luncheon served in a different room instead of in the same room wherein our meeting is held. Now, with the expression of thanks from all the officers of our club for the splendid attendance here tonight and there being nothing further for discussion we will declare this meeting adjourned.

(There being no further discussion, ON MOTION the meeting was adjourned to the lunch tables.)

J. D. CONWAY,

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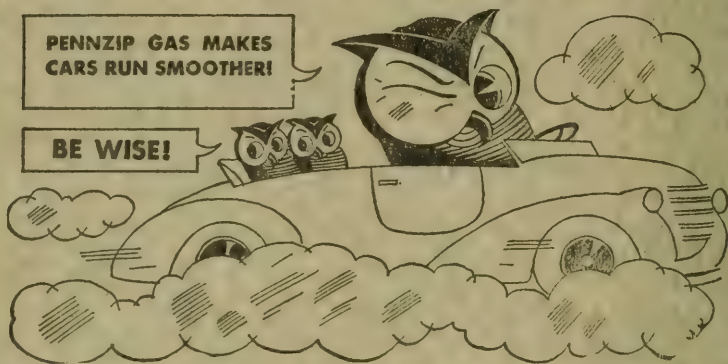
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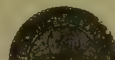
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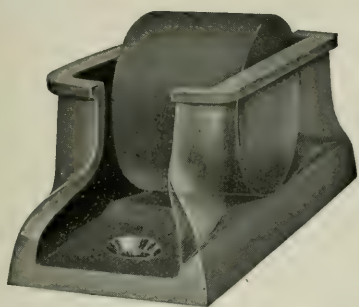
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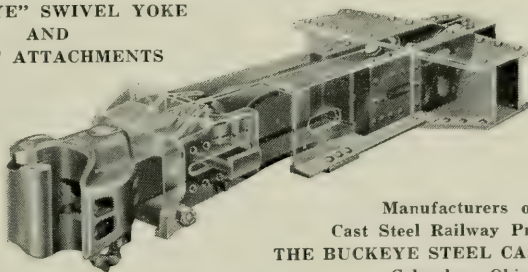


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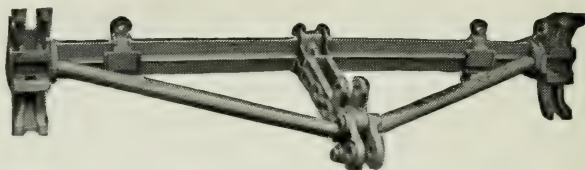
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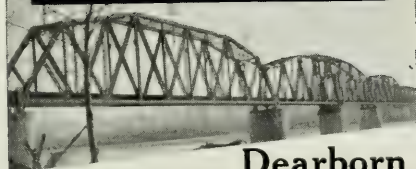
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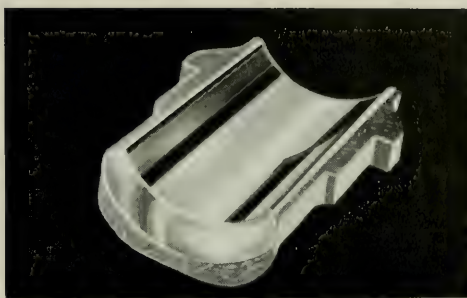
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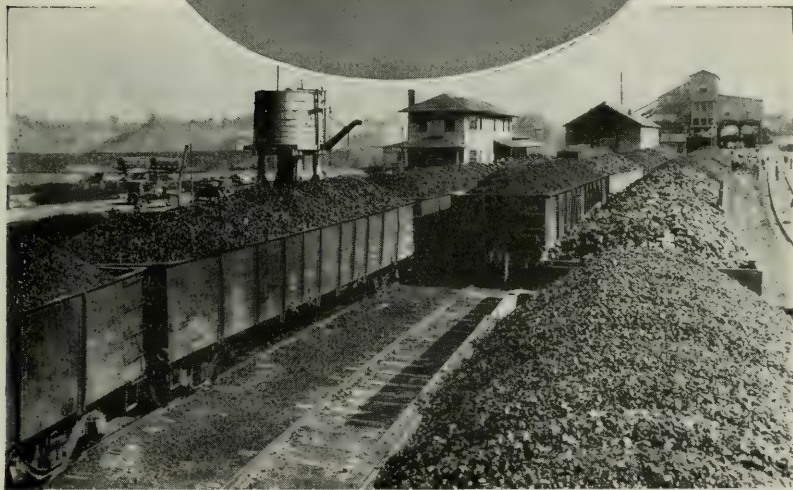
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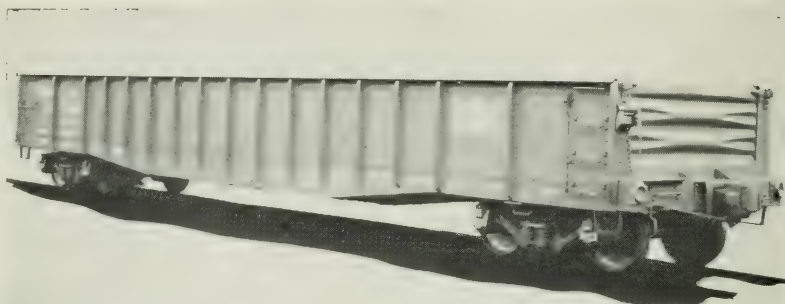
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**NOTE**—This form to be filled out in full by typewriter or printed and mailed to J. D. Conway, Secretary, 1941 Oliver Building, Pittsburgh, Pa. Membership fee, including dues, is \$3.00 for each fiscal year or part thereof, except those proposed in September or October. Those proposed in these months will be credited upon payment for the following fiscal year. Dues are payable in advance.

The fiscal year ends with the month of October.

### The Railway Club of Pittsburgh:

19\_\_\_\_\_

Gentlemen:

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Name.....

Title.....

Company.....

My Address.....

Recommended by.....



OFFICIAL PROCEEDINGS  
OF  
**The Railway Club of Pittsburgh**

Organized October 18, 1901

Vol. XXXVII.  
No. 6

**Pittsburgh, Pa., Apr. 28, 1938**

\$1.00 Per Year  
25c Per Copy

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## PAST PRESIDENTS:

|                        |                                  |
|------------------------|----------------------------------|
| *J. H. McCONNELL.....  | October, 1901, to October, 1903  |
| *L. H. TURNER.....     | November, 1903, to October, 1905 |
| *F. H. STARK.....      | November, 1905, to October, 1907 |
| *H. W. WATTS.....      | November, 1907, to April, 1908   |
| *D. J. REDDING.....    | November, 1908, to October, 1910 |
| *F. R. McFEATTERS..... | November, 1910, to October, 1912 |
| *A. G. MITCHELL.....   | November, 1912, to October, 1914 |
| *F. M. McNULTY.....    | November, 1914, to October, 1916 |
| *J. G. CODE.....       | November, 1916, to October, 1917 |
| *D. M. HOWE.....       | November, 1917, to October, 1918 |
| *J. A. SPIELMAN.....   | November, 1918, to October, 1919 |
| H. H. MAXFIELD.....    | November, 1919, to October, 1920 |
| FRANK J. LANAHAN.....  | November, 1920, to October, 1921 |
| *SAMUEL LYNN.....      | November, 1921, to October, 1922 |
| *D. F. CRAWFORD.....   | November, 1922, to October, 1923 |
| *GEO. D. OGDEN.....    | November, 1923, to October, 1924 |
| A. STUCKI.....         | November, 1924, to October, 1925 |
| *F. G. MINNICK.....    | November, 1925, to October, 1926 |
| G. W. WILDIN.....      | November, 1926, to October, 1927 |
| E. J. DEVANS.....      | November, 1927, to October, 1928 |
| W. S. McABEE.....      | November, 1928, to October, 1929 |
| E. W. SMITH.....       | November, 1929, to October, 1930 |
| LOUIS E. ENDSLEY.....  | November, 1930, to October, 1931 |
| *JOHN E. HUGHES.....   | November, 1931, to October, 1932 |
| F. I. SNYDER.....      | November, 1932, to October, 1933 |
| C. O. DAMBACH.....     | November, 1933, to October, 1934 |
| R. H. FLINN.....       | November, 1934, to October, 1935 |
| P. P. FORSBERG.....    | November, 1935, to October, 1936 |
| E. A. RAUSCHART.....   | November, 1936, to October, 1937 |

\*—Deceased.

Meetings held fourth Thursday of each month except June, July and August.

# PROCEEDINGS OF MEETING

APRIL 28, 1938

The meeting was called to order at the Fort Pitt Hotel, at seven o'clock P. M., Eastern Standard Time, with President G. M. Sixsmith in the Chair.

Registered attendance 264, as follows:

## MEMBERS

|                   |                         |
|-------------------|-------------------------|
| Adams, Frank W.   | Dixon, C. P.            |
| Aivalotis, John   | Dunham, C. W.           |
| Allen, Earl M.    | Edwards, Walter         |
| Ambrose, W. F.    | Emery, E.               |
| Ames, Louis       | Endsley, Prof. Louis E. |
| Anderson, G. S.   | Fair, J. M.             |
| Aulbach, A. J.    | Falkenburg, R. E.       |
| Bagaley, W. W.    | Ferguson, Gus           |
| Baker, W. E.      | Fisher, Earl H.         |
| Balla, J. A.      | Flanigan, A. C.         |
| Balzer, C. E.     | Flinn, R. H.            |
| Barr, H. C.       | Foard, E. A.            |
| Bauer, L. M.      | Forsythe, George B.     |
| Baumann, E. G.    | Fox, M. C.              |
| Beam, E. J.       | Fralic, C. F.           |
| Beltz, J. D.      | Freshwater, F. H.       |
| Bender, H. P.     | Galbraith, James R.     |
| Black, C. R.      | Geiser, W. P.           |
| Blyth, F. G.      | Gilg, Henry F.          |
| Brown, E. F.      | Gleeson, H. L.          |
| Buckley, William  | Goldstrom, G. E.        |
| Buffington, W. P. | Goodwin, A. E.          |
| Bull, R. S.       | Grove, C. G.            |
| Burel, W. C.      | Groves, Walter C.       |
| Burnette, G. H.   | Haller, Nelson M.       |
| Campbell, F. R.   | Hassler, E. S.          |
| Carr, T. W.       | Hautman, Hugo           |
| Chaffin, H. B.    | Hayward, C.             |
| Chase, D. K.      | Heer, Walter            |
| Chilcoat, H. E.   | Hengst, Guy E.          |
| Christy, F. X.    | Hess, Charles A.        |
| Cipro, Thomas     | Harper, G. C.           |
| Clowes, W. K.     | Hilgert, T. J.          |
| Conway, J. D.     | Hilstrom, A. V.         |
| Courtney, H.      | Holland, S. E.          |
| Davis, Charles S. | Holmes, E. H.           |
| Dean, E. E.       | Hood, A. N.             |
| Dehne, George C.  | Hunt, Lawrence          |

|                        |                       |
|------------------------|-----------------------|
| Huston, F. T.          | Posteraro, S. F.      |
| Irwin, R. D.           | Purchard, Paul        |
| Jakovac, Victor        | Rau, W. R., Jr.       |
| Jarres, F. A.          | Reagan, H. V.         |
| Johnson, J. W.         | Renshaw, W. B.        |
| Johnson, W. M.         | Rupp, E. S.           |
| Kellenberger, K. E.    | Rushneck, G. L.       |
| Kelly, L. J.           | Schako, E. J.         |
| Kroske, J. F.          | Schiller, John        |
| Kuhn, S. H.            | Searles, E. J.        |
| Lanahan, Frank J.      | Sheffer, R. W.        |
| Larson, W. E.          | Shellenbarger, H. M.  |
| Leonard, P. J.         | Sheridan, T. F.       |
| Lincoln, R. B.         | Shields, J. T.        |
| Long, R. M.            | Showalter, Joseph     |
| Longdon, Clyde V.      | Sixsmith, G. M.       |
| Longstreth, W. L.      | Smith, J. Frank       |
| Lowry, William F., Jr. | Smith, G. M.          |
| Lytle, L. J.           | Smith, L. H.          |
| Maliphant, C. W.       | Stamm, Bruce B.       |
| Malone, Frank B.       | Stamm, J. Duncan      |
| Masters, W. C.         | Steiner, P. E.        |
| Matchett, H. K.        | Stevens, L. V.        |
| Maxwell, Thomas        | Stevenson, R. F.      |
| Millar, C. W.          | Stewart, J. C.        |
| Miller, J. S.          | Suttle, Albert H.     |
| Miller, John           | Swank, W. E.          |
| Misner, George W.      | Taylor, H. P.         |
| Mitchell, W. S.        | Ternent, H. J.        |
| Monk, J. Thomas        | Teskey, Dr. Walter J. |
| Moore, Donald O.       | Tipton, G. M.         |
| Morgan, Homer C.       | Tomasic, N. M.        |
| Murphy, D. L.          | Trautman, Harry J.    |
| McCully, D. L.         | Tryon, I. D.          |
| McHail, J. L.          | Tucker, John L.       |
| McKinley, John T.      | Unger, Dr. J. S.      |
| McKinstry, C. H.       | Utzler, Elmer S.      |
| McLaughlin, H. B.      | Van Blarcom, W. C.    |
| McPherson, A. R.       | Van Vranken, S. E.    |
| McQuillen, J. J.       | Wallace, O. T.        |
| Nagel, James           | Weis, F. E.           |
| Nathan, W. S.          | Welton, A. A.         |
| Nelms, Harvey J.       | West, Troy            |
| Ord, G. H.             | Wheeler, C. M.        |
| Osborne, Raymond S.    | Williams, H. O.       |
| O'Sullivan, John J.    | Widmyer, R. G.        |
| Patterson, Charles L.  | Wilson, James R.      |
| Peirce, W. B.          | Wilson, W. H.         |
| Pickard, S. B.         | Woodings, W. H.       |
| Pollock, M. C.         | Woodward, R.          |



Wright, John B.  
Wyke, John W.

Yarhouse, W. T.  
Yarnall, Jesse

## VISITORS

Aivalotis, Harry  
Andler, Fred  
Angerman, J. C.  
Baker, C. H.  
Ball, James B.  
Bates, Charles  
Beck, C. H.  
Bell, C. W.  
Beglinger, Jack  
Billings, Walter E.  
Black, A. L.  
Bogovich, Joseph  
Brady, C. C.  
Brodie, Stuart B.  
Brown, J. F.  
Campbell, F. D.  
Davis, William B.  
Dean, G.  
Dixon, J. M.  
Douglass, C. S.  
Emrick, V. B.  
Emsheimer, Louis  
Geisler, Charles N.  
Greenleaf, Walter J.  
Haas, Fred  
Harding, W. R.  
Hargnett, H. L.  
Hassler, Edward  
Heinricks, Walter  
Henderson, W.  
Herb, A. F.  
Herington, C. E.  
Herzog, Leon  
Holt, James  
Huffman, Samuel  
Irwin, J. J.  
James, Robert E.  
Jenkins, William  
King, W. R.  
Kohut, Cole  
Lewis, S. B.

Little, C. R.  
Loughner, L. J.  
Lowry, Vernon C.  
Miller, C. J.  
Miller, Earl  
Miller, John S., Jr.  
Mudrony, John  
McCann, Daniel J.  
McConnel, F. B.  
McKee, Charles  
McKinstry, Clair M.  
McMillen, J. M.  
Nickull, Francis  
Outens, S.  
Palmquist, Emil L.  
Paul, John N.  
Pfordt, R. E.  
Pishta, A. W.  
Porter, C. E.  
Rateton, James  
Reagan, P. H.  
Rees, B. V.  
Reynolds, D. E.  
Roberts, C. A.  
Robinson, H. J.  
Rohyans, A. V.  
Ross, Charles C.  
Sixsmith, James  
Statler, H. A.  
Staver, M. C.  
Taylor, John M.  
Thomas, Lyle K.  
Thomas, M. F.  
Tripp, W. N.  
Urban, C. E.  
Van Wormer, G. M.  
Vollmer, W. K.  
Wallett, George C.  
Walther, G. W.  
Webster, John E.  
Weis, Mrs. Frank E.

Wilcox, Walter

PRESIDENT: Gentlemen and Mrs. Weis, this being the first meeting under daylight saving time it is somewhat un-

certain as to the extent to which it may have affected our attendance at this time of the evening. However, the time having arrived when we should get along with our program, we will open the evening's proceedings by having Mr. Weis, who does not need any introduction to this audience, provide some little entertainment while our people are assembling. Mr. Weis.

(At this point Mr. Frank E. Weis introduced Mr. Edward S. Hassler who rendered several baritone solos, accompanied by Mrs. Weis at the piano.)

PRESIDENT: Thank you very much, Mr. Hassler. We also wish to thank you, Mr. Weis, for your share in this entertainment, and also thank Mrs. Weis for her fine performance at the piano.

I assume all of you gentlemen have signed registration cards at the door; there is, therefore, no necessity for a roll call and same is dispensed with. Likewise we will dispense with the reading of the minutes of the preceding meeting. The proceedings of that meeting are now in course of preparation in pamphlet form and will be distributed shortly, and, if there are no objections we will consider that sufficient. Mr. Secretary, are there any announcements?

SECRETARY: Mr. President and gentlemen: We have the following applications tonight:

Franz, H. W., Freight Representative, Pennsylvania Railroad, 446 National Road, Wheeling, W. Va. Recommended by G. M. Sixsmith.  
Lesko, Andrew, Tower Switch Maintainer, Monongahela Connecting Railroad, 336 DuPont street, Pittsburgh, Pa. Recommended by H. C. Pringle.

PRESIDENT: If Mr. Andrew Lesko is in the room I would like to take advantage of this opportunity of welcoming him as a prospective member of this club and I hope he will find his connection with our club well worth while. While we are welcoming people, I would like to say a word of greeting to any guests who may be present. We are very glad to have you as our guests on this occasion and we want you to feel entirely welcome and hope you will come back again. Mr. Secretary, are there any other announcements?

SECRETARY: Mr. President and gentlemen, we have had reported, since our last meeting, the death of one of our members, William W. Shuster, Division Engineer of the P. & W. Va. Railway Company, who died on April 19, 1938. He became a member of our club on September 27, 1934.

PRESIDENT: We sincerely regret the passing of Mr. Shuster. We thought a lot of him as a member of this club and an appropriate memorial will appear in the proceedings of this meeting.

If you have been reading the newspapers you will understand why I must regretfully announce the inability of Mr. W. J. Cameron of the Ford Motor Company to keep his speaking engagement with us tonight. As you probably know, Mr. Cameron was a member of the Ford party that had a conference and luncheon engagement with the President yesterday in Washington, and Mr. Ford required that Mr. Cameron be with him in New York today. So, therefore, fate is against us so far as Mr. Cameron being with us at this meeting is concerned. If the meeting with the President was productive of any good, I am sure we will be well repaid for our disappointment at this time, because, I am glad to say, it is only temporary. When this engagement was made, Mr. Cameron fully intended keeping it, but as previously mentioned, it just did not work out as intended and we have information that he feels pretty badly about it. However, he is not going to disappoint us entirely and has promised to be with us on the occasion of our September meeting. I am sure you will be glad to hear that and let us hope nothing interferes with his plans at that time.

Now, the gentleman I am about to introduce must not be referred to or considered in the capacity of a substitute or as a pinch-hitter in place of Mr. Cameron. He is an attraction in his own right and his name is and has been on our list of prospective speakers for one of our Fall meetings, and all we have done is to switch dates to meet the situation that confronted us. I am happy to say that this gentleman very graciously and unhesitatingly placed himself at our disposal on rather short notice when we learned definitely, after a week of uncertainty, that Mr. Cameron could not be here.

Gentlemen, it is my pleasant duty to present to you at this time your guest speaker of the evening, Mr. John E. Webster, General Works Engineer of the Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pennsylvania, who will speak on the Westinghouse Flood Control Station. Mr. Webster.

## WESTINGHOUSE FLOOD CONTROL STATION

By JOHN E. WEBSTER, General Works Engineer,  
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

It is unnecessary for me to suggest to a group of railroad men that floods are a nuisance. You probably have had as serious experience with them as we at the Westinghouse Company have had. I recently saw a film of the Pittsburgh flood of 1936 and the condition of some of your railroads and railroad equipment at that time made me believe that the Westinghouse Company was not the only flood sufferer.

Westinghouse moved its plant to East Pittsburgh in 1895. East Pittsburgh is situated on Turtle Creek a mile and a half from the Monongahela River, and it is subject to backwater floods from the Monongahela River. When I say "backwater", I should say "slack water", because, during the flood the creek is running out all the time. The big river never comes up into the creek. It simply holds the creek water in during the floods.

About one-third of our floors are 738.5' above sea level, another third 740' and the remainder 742'. Zero on the Pittsburgh Point gauge is 694.2'. The Saint Patrick's day flood was 46' on the Pittsburgh gauge which was 740.2' above sea level, but at East Pittsburgh it was 746' or six feet higher.

We have had four floods over our floors since the plant has been out there. In 1907 we had water at an elevation of 743½', which gave us from 1½' to 4-feet on all of our floors. We had two floods in '24 when the water was 739½' and 740, but there was still a great deal of damage. The total flood damage to Westinghouse plant since we have been out there is between three and four million dollars, so you can see it was a real handicap to us. After the 1907 flood we tried to cure the troubles by installing flood gates at all entrances of the buildings with floor elevation of 740' and installing flood pumps to take out seepage. We never had a chance to try them because there was no flood above that level until 1936, but when the 1936 flood came along, the flood pumps worked and the gates worked and kept the floor pretty dry until the water simply went over the top and then, of course, it was all off; there was no chance of getting a real test in the time the water was coming up to the level of the flood gates at 744'. I was in the power house at the time and we kept the water out of the



power house and the power house basement by pumps and flood gates until it came up over the top of the gates and through the windows when we had to throw up the sponge. The plant was dead. Of course, you can imagine the trouble and mess the flood made as Turtle Creek is full of mud and debris. Our equipment and machine tools are motor-driven and the motors got full of mud and the machine tools and the warehouse stock was under water, so it was a real mess. One of our greatest losses was the lead cables of our power distribution system, as the switch-board was too low for this flood and the pot heads at the terminals were not waterproof. In 1906 and 1907 when these cables were installed there were no water-proof pot heads. We had to string temporary cables to get power out of our power house and it was nearly a year before we had all these bad cables out and that alone cost us around \$400,000.00

After this flood the management put it right up to us who are responsible for the maintenance and operation of the plant to work out a plan to protect our plant against another flood. Our first thought, was to put up higher flood gates and brick up the windows to the height of the 1936 flood, or six feet above floor level. That possibly could be done, but our plant is built on cinder fill and is impervious to water and it seemed absolutely impossible to protect the buildings themselves against the six feet of water around the buildings when this water could get under the floors and the hydraulic pressure of that six-foot head would raise the floors and undoubtedly cause us more seepage and leakage than we could pump out. We then resurrected a plan which was suggested some years ago; that is, to put in the flood gates that we finally installed. That plan was first suggested after the 1907 flood, but, at that time, the pumping equipment available had not been developed to sufficient capacity to make the plan seem practical. Of course, at that time, we did not know of the 1936 flood and we thought we were fairly well protected; that is, by having the flood gates to take care of the lower flood levels, but after this flood we resurrected this plan and finally got it going.

In order to get an idea of what the scheme is, you must picture the topography of the plant and the location there. I suppose you railroad men are all familiar with the layout at East Pittsburgh on the main line of the Pennsyl-

vania Railroad. The Pennsylvania Railroad crosses Braddock Avenue and Turtle Creek just below our plant over a stone arch bridge. The stone arch bridge was built over fifty years ago and consists of three arches each thirty-five feet wide. The railroad itself has an elevation of about 754' and extends all around our plant, so we are fortunate in having a dike around the plant except at this one point where the creek crosses under the bridge. Our problem then was only to protect that one spot.

The Westinghouse Bridge—the highway bridge, route No. 30—crosses at this same point and one of its piers on the east side of Turtle Creek limits the width of the stream at that point. Our first problem, was to find out whether we could get permits to put the plan across. All streams in Pennsylvania are under the jurisdiction of the State Department of Waters and Forests at Harrisburg, Captain Ryder being Chief Engineer, and as soon as we had plans far enough along, we went to Harrisburg and presented them to him and finally got the tentative approval from the Water and Power Resource Board to go ahead with the proposition. In getting that approval we had to convince the State Board that this project would have no damaging affect on anyone else. The Carnegie-Illinois Steel Corporation, Edgar Thomson plant, and the borough of Braddock, are right below us. Our plan was to put gates across the creek and across Braddock avenue which would prevent high water from the Monongahela River coming up Turtle Creek and holding the creek water in at this high level and at the same time pumping the water from Turtle Creek out of Turtle Creek valley into the high water on the other side of the gates.

During the 1936 flood, for instance, all the water coming down Turtle Creek went into the Monongahela River excepting the portion stored in the valley. We estimate only about 25 per cent during the rise of the river was stored in the Turtle Creek Valley; 75 per cent went out anyway and most of it, at least twenty-four hours before the crest of the flood and was 'way below Pittsburgh at the time of the crest. The maximum run-off of Turtle Creek Valley precedes the crest of the flood by twenty-four hours. Any storm over the water-shed that causes a flood at Pittsburgh, will run out of Turtle Creek valley before the crest reaches Pittsburgh. That was proven in 1936 as the day before the flood

we had a very heavy run-off in the Turtle Creek valley which began to recede before there was any slack water from the river.

With no gates in the creek the full flow of the creek less that stored goes into the river during the rise of the river. With gates the full flow is pumped to the river during the rise. At the crest the full creek flow goes to the river in either case, so the only effect of the gates is a little more water in the river ahead of the crest.

The various engineers we discussed this with agreed that the effect on the people below us would be negligible; it would take very close calculation to show that the pumping out of this water ahead of the crest would have any effect on the water level below us.

We finally got a permit from the State and then went ahead with our design and estimate and finally got approval of the management for the expenditure. The appropriation is five hundred and seventy-five thousand dollars and I am glad to say we spent a little less than that. Another thing we had to decide was what the pumping capacity should be. We found that the maximum recorded water runoff of Turtle Creek valley occurred in September, 1911, and that was 10,800 cubic feet per second, and State authorities tell us there are many areas similar to Turtle Creek area where there has been a run-off due to heavy rainfalls of two or three times 10,800 feet. We estimate that at the time of the 1936 flood, the run-off at Turtle Creek at our plant was 7,500 feet per second the day before but under 4,500 feet per second at the slack water crest. We finally decided if we could pump from six to seven thousand feet a second that we would be safe; that is, as safe as it is justified in going. The probability of a second heavy rainfall occurring at the time of the slack water crest is so small that the expense of protecting against it could not be justified.

It was decided to make the top of the walls and gates 750 feet or 4 feet above the 1936 flood stage. The creek bottom at the site is 721 feet so the creek gate is 29 feet high.

With the Tygart dam and other reservoirs being installed by United States engineers up the Allegheny River watershed, each one of those will decrease the height of future floods so we feel we have done all we are justified in doing in capacity and height of our station.



The design of the pumps was quite a problem. We found that there were no pumps made of the capacities we needed. Our company has been building pumps for a long time, although we sell no pumps alone. As far back as thirty years ago our company started developing pumps for low heads of the propeller type, the propeller being very much like the propeller of a steamship. The propeller is put in a closed cylinder with just clearance diameter. Our South Philadelphia engineers, who design our pumps, were consulted and they agreed to design pumps having the required capacity in two or three units.

We first thought we would use two pumps of 3,000 cubic feet capacity, but after further discussion with our officials it was thought we should have three pumps, two of which were to take care of a flood of the 1936 capacity and the other being a spare. We finally settled on three pumps of 2,500 cubic feet capacity each, to pump against a head of ten feet. The propellers are one-piece cast steel eleven feet ten inches in diameter and each propeller weighs 18,000 pounds. We had them cast at the Union Steel Casting Company on Butler street, Pittsburgh. They run at  $112\frac{1}{2}$  revolutions and are driven by 5,000 horse power motors. The vertical shafts are 26 feet long and 16 inches in diameter. The motors are above the 750 foot level and the elevation of the propeller is 724 feet which is about two feet above the bottom of the stream so that, normally, the propeller itself is dry. With the normal flow in the creek the propeller and the whole pump is above water, so we do not have to worry about corrosion in the acid water in Turtle Creek.

The gates themselves,—there are two gates, one across Turtle Creek which is 83 feet long and 29 feet high. I am told by some people who looked over the records of the Government and other projects of this kind, that it is the largest vertical lift gate ever built. It is built of steel entirely welded and was built in place. The Braddock avenue gate is 43 feet long and 20 feet high, and, of course, of a similar design. We have to prevent the water coming under the gates when down. We were fortunate in finding shale rock at an elevation of 711 feet,—that is, 10 feet below the bottom of the creek. We drove steel piles and excavated and put in a reinforced concrete sill 12 feet wide at the bottom and about four feet wide at 721 feet elevation which is normal creek



bottom level. This was built one-half at a time and poured integrally with the piers at the side of the creek. The piers at the side of the creek have to hold the gates and take the pressure of water when there is a ten-foot difference of head. which is 625 pounds pressure over the whole submerged area of the gate and one-half this on the area above the low water side; that made a horizontal pressure of 950,000 pounds on the piers. We used standard methods of figuring piers and found just how much weight we had to have in the piers and the footers. The footer on the pier between the creek and Braddock avenue is 35 feet long and 25 feet wide resting on rock and is integral with the concrete sill which goes across under the creek and also across under Braddock avenue, which gives it the required strength and weight to withstand this pressure.

The gates themselves are lifted in grooves on the sides of the piers. When it came to a question of how to lift them I consulted with government engineers and went to see several dams down the Ohio River, and found they have a very elaborate way of lifting the gates with separate synchronous motors on each end, such as are used in paper machines, so the two ends of the gates lift at exactly the same speed. The gates on the government dams are counter-weighted. We felt that a less expensive method must be found so I called in several cable people and discussed methods of lifting gates with sheaves and steel cables with a winch. Cables, you know, are used in all sorts of cranes and hoists and give very reliable service. We finally decided to lift the gates with cables having sheaves on the end of each gate. On the large gate we have four sheaves top and bottom, so we have eight one-inch steel cables on each end. It is relatively inexpensive and works very well. It lifts the gate, weighing 80 tons, very smoothly, with only a 25 horse power motor. We did not use counter-weights. I felt we wanted the gates to be sure to come down. Of course, if you can lift them with a 25 horse power motor there is no real excuse for putting counter-weights on. The two gates are driven by one winch having two drums, one for the small gate and one for the large gate.

The actual design of the pumps and the construction of them is something that took a lot of time. I found that a miniature model is built of all hydraulic jobs. You can see many of these models in the hydraulic laboratory at Carne-

gie Tech. Our engineer in South Philadelphia who designed the pump built a miniature pump with the intake and discharge passages so as to study the flow and avoid turbulence. The pumps are on the east bank of the creek just below the Westinghouse bridge pier. The three pump intakes each 26 feet wide and 17 feet high are just up stream from the gate. The passage ways parallel each other around the gate to discharges just below the gate. The water velocity is 5.6 feet per second at the intake, 21 feet going through the pump and 12 feet at the discharge.

We started construction the first of August and with the understanding with our management we would have the installation for the February flood if there were any. We poured about 3,700 yards of concrete, all excavation being done in the meantime. We got two pumps ready about the middle of February and tried them out by shutting the gates and letting the water build up on the upper side of the gate until we had a head of water on the suction side of the pumps. We found we could get a good seal on the sill under the gate with very little water leakage. That problem of seal caused us a good deal of worry but when we got the gate down and built up a little head on the other side, the velocity of the water under the gate was sufficient to clean the sill and we had no trouble in dropping our gate right down on the seal. With two pumps in operation and the third standing still we had to prevent the water coming back through the idle pump, so, on the discharge end we have check valves—or flapper gates—similar to flappers you see on the discharge side of a fan. The flappers lift up with the flow and drop down on each other to prevent back water. The motors are 5,000 horse power each. We have in our own power house generating capacity of 10,000 kw. of 60 v. power and a Duquesne Light Company connection of 30,000 kw. capacity. The sub-station at the pumping station is connected to this supply. The power is carried on duplicate cables at 22,000 volts and stepped down to 6,600, the voltage at which the motors run. The motors are synchronous with windings to pull in at normal torque, starting at 75 per cent voltage.

The installation is unique but we had a favorable set-up for it. Whether or not similar installations will apply to other localities I do not know. I do know a good many people have gone out to see it and discussed other places where

similar equipment can be used. We have the largest volume capacity pumps ever built and have the largest vertical lift gate ever built and it is going to do the job. We have a couple of films showing the pumps in operation and the style of the construction.

(At this point moving pictures were displayed.)

PRESIDENT: I think you will all agree with me that we have been very much benefitted by the splendid presentation by Mr. Webster of this flood control subject. In a few moments I will ask one of our members to express to Mr. Webster and the Westinghouse Company our thanks for his having come here tonight. In the meantime, as he has said, he will be very glad to entertain any questions and if there are any questions you would like to ask, let us have them, please, now. Are there any questions?

QUESTION: How fast is that gate raised and lowered?

MR. WEBSTER: 29 feet in about 10 minutes.

QUESTION: What takes care of dirt and rubbish in the creek so that it doesn't go through your pumps?

MR. WEBSTER: We have screens at the intake. However, the pumps will take a railroad tie. Our intake screens are eighteen inches apart. We do not want them so fine they will clog up. In addition to the screens at the intake we expect to catch a floating object as it passes under the McKeesport road bridge which is just upstream from the P. R. R. bridge. We have a foot walk about four feet out in front of the intake screens where men can be stationed and clean the screens. Most of the debris that comes down the creek in high water will run off before we shut our gates.

QUESTION: How fast do the propellers run?

MR. WEBSTER: 112½ revolutions per minute, which gives a tip velocity of about 45 miles per hour which is a pretty good speed, in water.

MR. EMERY: When you cross Braddock Avenue, how do you take care of leakage there?

MR. WEBSTER: When the gate is lowered to the street pavement a timber on the bottom of the gate is hewn to fit the contour of the street. Of course, there is some leakage.



QUESTION: Is there any danger on the down stream side, of cutting out the roadway?

MR. WEBSTER: We tunneled under the street, down to rock, and put in a concrete wall 4 feet wide and 12 feet high from the pavement to the rock, so we have a very substantial sill under the pavement to stop any washing under it.

QUESTION: How do you take care of street car wires under the gate?

MR. WEBSTER: The gate is about five feet wide, and at the bottom of the gate we have, just flush with the bottom, a section of trolley wire mounted to register accurately at each end with the trolley brought up to it, there is a little gap at each end and this section under the gate is fed by separate feeder. There is six feet of water on Braddock Avenue before we need to shut the gate so no traffic is interefered with.

QUESTION: Are the gates locked in normal position?

MR. WEBSTER: Yes, they are held by heavy steel hooks. We have to raise them two or three inches and then release the hooks. The strain is not on the cables themselves.

QUESTION: How does the efficiency of these pumps compare with centrifugal pumps?

MR. WEBSTER: I am not a pump man, but the maximum efficiency of this pump is 66 per cent which, I understand, is very good efficiency for pumps.

QUESTION: Do you have any trouble with differential cable stretch in the run of the cable going across to the other side of the gates?

MR. WEBSTER: We have not had. We, of course, adjusted the cables before we raised the gates and after the gates had been in place some time and been raised and lowered and adjusted again, we marked the ends of the gates and found that there was practically no change after lowering and raising them again.

PRESIDENT: Before calling on Mr. Endsley, I would just like to say we are always glad to note the continued



interest in the affairs of this Club on the part of past officers. With that thought in mind, I would like to read a telegram received late this afternoon from one of our past Presidents, Mr. R. P. Forsberg. He says: "Regret that on account of having to remain in Washington today I will be unable to attend meeting of Railway Club tonight." Now, I think that is a fine spirit on the part of Mr. Forsberg, that he would take the time and trouble to send us that telegram. I thought it was only proper that I should read it to you to let you know his interest. We will now hear from Professor Endsley.

PROF. LOUIS E. ENDSLEY: I have enjoyed very much, tonight, the talk on the design of this flood control station in East Pittsburgh. I have had a little experience on the design of a dam down the river and enjoyed Mr. Webster's description of this dam and flood control gate. I will say, from my experience, it is the largest straight gate I have heard of. Mr. Webster has given us a very good description of what the Westinghouse Company has done and I am sure you all enjoyed his description of this very unique method of protecting the Westinghouse valley. I move you, Mr. President, a rising vote of thanks be extended to Mr. Webster and the Westinghouse Company for his very interesting description of this dam and flood control gates.

PRESIDENT: You have heard the motion, gentlemen; let us put it into execution.

(Whereupon a rising vote of thanks was extended to Mr. Webster).

PRESIDENT: Now, gentlemen, I would like to call your attention to the fact that our next and last meeting before summer vacation will be held May 26. On that occasion we feel we are going to have a very interesting speaker and subject for your entertainment. Mr. Weis has arranged for some members of the Rodeo group now at Duquesne Garden to give us a little entertainment at the close of this meeting. Therefore, if there is nothing additional to come before the meeting we will turn the balance of the evening over to Mr. Weis, on the platform to my right.

Following that entertainment, the meeting will stand adjourned, and lunch will then be served at this end of the room. Thank you very much. Mr. Weis.

(Mr. Weis brought the Rodeo performers into the meeting).

MR. FRANK E. WEIS: I happened to run into these boys. They are on their way from this show to Major Bowes in New York, working their way along. They left Texas some five weeks ago and expect to be in New York and go on Major Bowes' program. By giving them this little job we are helping them along and I am sure we will enjoy their entertainment also.

(There followed a highly entertaining performance of rodeo stunts which was enthusiastically received).

J. D. CONWAY, Secretary.



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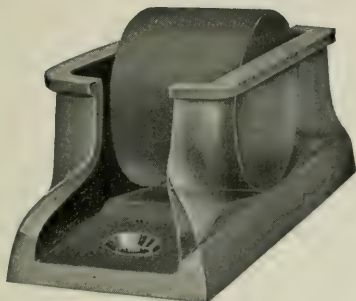
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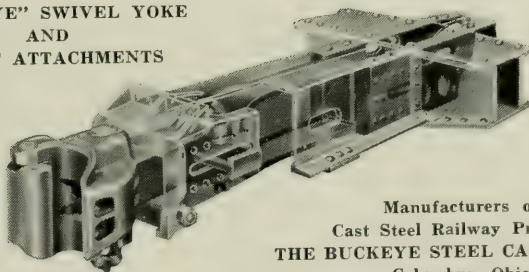


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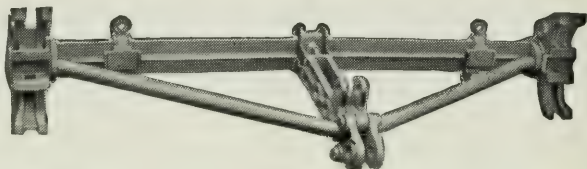
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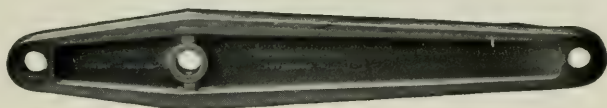
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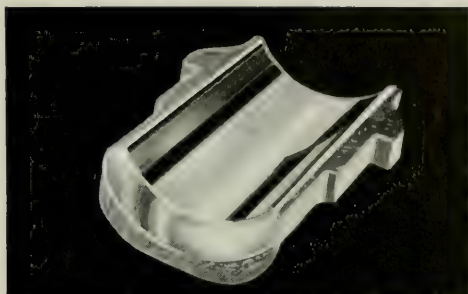
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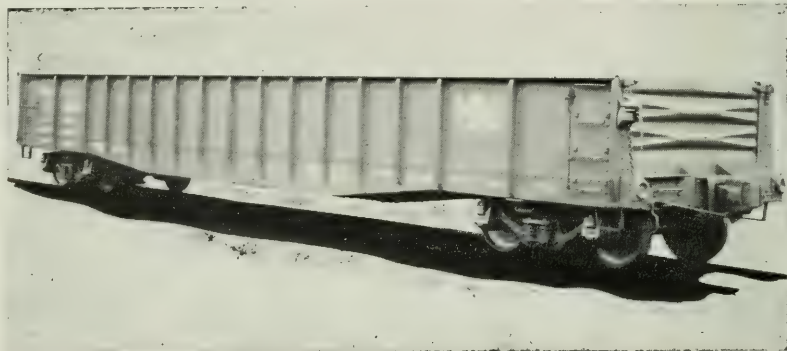
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19

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OF  
**The Railway Club of Pittsburgh**

Organized October 18, 1901

Vol. XXXVII.  
No. 7

**Pittsburgh, Pa., May 26, 1938**

\$1.00 Per Year  
25c Per Copy

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 THOMAS R. FITZPATRICK, Freight Traffic Mgr., P. & L. E. R. R. Co., Pittsburgh, Pa.  
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## PAST PRESIDENTS:

|                        |                                  |
|------------------------|----------------------------------|
| *J. H. McCONNELL.....  | October, 1901, to October, 1903  |
| *L. H. TURNER.....     | November, 1903, to October, 1905 |
| *F. H. STARK.....      | November, 1905, to October, 1907 |
| *H. W. WATTS.....      | November, 1907, to April, 1908   |
| *D. J. REDDING.....    | November, 1908, to October, 1910 |
| *F. R. McFEATHERS..... | November, 1910, to October, 1912 |
| *A. G. MITCHELL.....   | November, 1912, to October, 1914 |
| *F. M. McNULTY.....    | November, 1914, to October, 1916 |
| *J. G. CODE.....       | November, 1916, to October, 1917 |
| *D. M. HOWE.....       | November, 1917, to October, 1918 |
| *J. A. SPIELMAN.....   | November, 1918, to October, 1919 |
| H. H. MAXFIELD.....    | November, 1919, to October, 1920 |
| FRANK J. LANAHAN.....  | November, 1920, to October, 1921 |
| *SAMUEL LYNN.....      | November, 1921, to October, 1922 |
| *D. F. CRAWFORD.....   | November, 1922, to October, 1923 |
| *GEO. D. OGDEN.....    | November, 1923, to October, 1924 |
| A. STUCKI.....         | November, 1924, to October, 1925 |
| *F. G. MINNICK.....    | November, 1925, to October, 1926 |
| G. W. WILDIN.....      | November, 1926, to October, 1927 |
| E. J. DEVANS.....      | November, 1927, to October, 1928 |
| W. S. McABEE.....      | November, 1928, to October, 1929 |
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| LOUIS E. ENDSLEY.....  | November, 1930, to October, 1931 |
| *JOHN E. HUGHES.....   | November, 1931, to October, 1932 |
| F. I. SNYDER.....      | November, 1932, to October, 1933 |
| C. O. DAMBACH.....     | November, 1933, to October, 1934 |
| R. H. FLINN.....       | November, 1934, to October, 1935 |
| R. P. FORSBERG.....    | November, 1935, to October, 1936 |
| E. A. RAUSCHART.....   | November, 1936, to October, 1937 |

\*—Deceased.

Meetings held fourth Thursday of each month except June, July and August.

# PROCEEDINGS OF MEETING

MAY 26, 1938

The meeting was called to order at the Fort Pitt Hotel at seven o'clock P. M.. D. S. T., with President G. M. Sixsmith in the Chair.

Registered attendance 487, as follows:

## MEMBERS

|                    |                         |
|--------------------|-------------------------|
| Adams, C. E.       | Cannon, John G., Jr.    |
| Adams, Frank W.    | Carmody, J. J.          |
| Adair, V. B.       | Carr, T. W.             |
| Ainsworth, J. H.   | Case, H. D.             |
| Ainsworth, John R. | Cavanagh, T. J.         |
| Aivalotis, John    | Cherry, D. C.           |
| Allen, Earl M.     | Chilcoat, H. E.         |
| Anderson, J. P.    | Christy, F. X.          |
| Aulbach, A. J.     | Cipro, Thomas           |
| Baer, Harry L.     | Clowes, W. K.           |
| Bagaley, W. W.     | Code, C. J.             |
| Baker, W. E.       | Conway, J. D.           |
| Balla, J. A.       | Courtney, Harry         |
| Balzer, C. E.      | Crenner, J. A.          |
| Batchelar, E. C.   | Cruikshank, J. C.       |
| Baughman, G. W.    | Cudworth, H. D.         |
| Baumann, E. G.     | Cunningham, J. L.       |
| Beam, E. J.        | Dalzell, W. E.          |
| Beitsch, George F. | Dambach, C. O.          |
| Beltz, J. D.       | Davis, Charles S.       |
| Bender, H. P.      | Day, Tom R.             |
| Berg, K.           | Deakins, H. H.          |
| Berg, Max          | Dean, E. E.             |
| Bergman, C. R.     | Dean, Robert W.         |
| Beswick, R. M.     | Dean, W. A.             |
| Binyon, T. E.      | Dehne, George C.        |
| Black, C. R.       | Diven, J. B.            |
| Blair, John R.     | Dixon, C. P.            |
| Blyth, F. G.       | Downing, J. A.          |
| Boyd, John R.      | Duff, William G.        |
| Bowery, Frank J.   | Dunham, C. W.           |
| Britt, T. E.       | Durnell, W. E.          |
| Bryant, Jess H.    | Eaton, Frederick H.     |
| Buckley, William   | Edsall, S. D.           |
| Buffington, W. P.  | Edwards, Walter         |
| Burel, W. C.       | Egly, M. J.             |
| Buzzerd, J. P.     | Ely, J. L.              |
| Callahan, D. E.    | Emery, E.               |
| Campbell, F. R.    | Endsley, Prof. Louis E. |

|                       |                        |
|-----------------------|------------------------|
| Eysmans, J. L., Jr.   | Hunker, G. F.          |
| Fair, J. M.           | Hunt, Lawrence         |
| Falkenburg, R. E.     | Huston, F. T.          |
| Ferguson, George      | Hykes, W. H.           |
| Finegan, T. A.        | Irwin, R. D.           |
| Fisher, E. M.         | Israel, E. J.          |
| Flinn, R. H.          | Jakovac, Victor        |
| Flynn, F. E.          | Jarres, F. A.          |
| Foard, E. A.          | Jeffrey, John          |
| Frauenheim, Pierce H. | Johnson, J. W.         |
| Freshwater, F. H.     | Johnson, Le Vere H.    |
| Fry, L. H.            | Kellenberger, K. E.    |
| Furch, George J.      | Kentlein, John         |
| Galbraith, James R.   | Klingensmith, W. S.    |
| Galinis, J. W.        | Kuhn, S. H.            |
| Gallowich, Louis J.   | Kuhnert, P. C.         |
| Geertz, Allan O.      | Kulp, J. G.            |
| Geiser, W. P.         | Kusick, Harry F.       |
| George, W. J.         | Lanahan, J. S.         |
| Gilbert, William J.   | Larson, W. E.          |
| Gilg, Henry F.        | Lauderbaugh, Moss      |
| Gillespie, J. Porter  | Leonard, C. W.         |
| Gillum, J. S.         | Leonard, P. J.         |
| Glaser, C. J.         | Lesko, Andy            |
| Goda, P. H.           | Lewis, N. F.           |
| Goldstrom, G. E.      | Long, R. M.            |
| Good, W. G.           | Longdon, Clyde V.      |
| Goodlin, C. L.        | Longstreth, W. L.      |
| Gorman, Andrew T.     | Lowry, William F., Jr. |
| Gray, M. L.           | Lutz, Harry            |
| Grove, C. G.          | Lytle, L. J.           |
| Groves, W. C.         | Malone, Frank B.       |
| Hackett, C. M.        | Matchett, H. K.        |
| Hagan, Harry F.       | Megee, C. R.           |
| Haller, Nelson M.     | Millar, C. W.          |
| Hance, R. H.          | Miller, J. B.          |
| Hancock, Milton L.    | Miller, L. P.          |
| Hansen, William C.    | Miller, R. C.          |
| Harper, James W.      | Misner, George W.      |
| Haupt, H. H.          | Mitchell, W. S.        |
| Hayward, C. H.        | Moir, W. B.            |
| Heer, Walter          | Monk, J. Thomas        |
| Hengst, Guy E.        | Montgomery, J. L.      |
| Henry, C. J.          | Moore, D. O.           |
| Hess, Charles A.      | Morgan, Homer C.       |
| Hicks, E. S., Jr.     | Morris, J. D.          |
| Hilstrom, A. V.       | Murphy, D. L.          |
| Holbrook, E. L.       | Myer, C. R.            |
| Holmes, E. H.         | McCarty, J. G.         |
| Hoopes, R. E.         | McCrea, J. G.          |
| Huff, A. B.           | McCuen, J. T.          |



McFetridge, W. S.  
 McKim, Hollis  
 McKinley, A. J.  
 McKinley, John T.  
 McKinstry, C. H.  
 McLaughlin, H. B.  
 McTighe, B. J.  
 Nieman, Harry L.  
 O'Leary, Jeremiah J.  
 O'Reilly, G. Arthur  
 O'Sullivan, J. J.  
 Overholt, B. C.  
 Paisley, F. R.  
 Passmore, H. E.  
 Patterson, Charles L.  
 Peel, J. E., Jr.  
 Peirce, W. B.  
 Pickard, S. B.  
 Purchard, Paul  
 Rankin, B. B.  
 Read, A. A.  
 Reagan, Henry V.  
 Renshaw, W. B.  
 Roberts, E. L.  
 Robertson, A. S.  
 Rudd, W. B.  
 Rupp, E. S.  
 Rushneck, G. L.  
 Rutter, H. E.  
 Ryan, D. W.  
 Sarchet, Roger  
 Schiller, John  
 Searles, E. J.  
 Seivard, A. M.  
 Sekera, C. J.  
 Sennstrom, Harold R.  
 Severn, A. B.  
 Sheffer, R. W.  
 Shellenbarger, H. M.  
 Sheridan, T. F.  
 Shull, C. O.  
 Sipe, C. P.  
 Sixsmith, G. M.  
 Smith, Gilbert M.  
 Snyder, Joseph J.  
 Spencer, A. C.  
 Stack, John E.  
 Stamm, Bruce B.  
 Stamm, J. Duncan  
 Steding, H. L.  
 Steigerwalt, R. W.

Steiner, P. E.  
 Sterling, C. C.  
 Stevens, L. V.  
 Stevenson, R. F.  
 Stewart, J. H.  
 Stoecker, J. P.  
 Stoffregen, Louis E.  
 Stucki, A.  
 Stuebing, A. F.  
 Suckfield, G. A.  
 Sullivan, A. W.  
 Sutherland, Lloyd  
 Suttle, Albert H.  
 Sutton, K. B.  
 Swenk, Raymond  
 Swope, B. M.  
 Ternet, H. J.  
 Teskey, Dr. W. J.  
 Thomas, T.  
 Tomasic, N. M.  
 Tracey, J. B. A.  
 Trax, L. R.  
 Troxell, H. K.  
 Tucker, John L.  
 Tyler, B. W.  
 Unger, Dr. J. S.  
 Utzler, Elmer S.  
 Van Woert, F. E.  
 Vowinkel, F. F.  
 Wallace, O. T.  
 Walter, E. R.  
 Walton, W. K.  
 Weis, Frank E.  
 Welton, A. A.  
 Westerman, M. A.  
 Wheeler, C. M.  
 Wickerham, F. A.  
 Widmyer, Robert G.  
 Wilkins, Harry  
 Williams, David L.  
 Williamson, A. G.  
 Wilson, James R.  
 Wilson, W. F.  
 Wilson, W. H.  
 Winslow, G. W.  
 Woodings, Robert T.  
 Woodward, R.  
 Woollen, A. H.  
 Wyke, John W.  
 Young, J., Jr.  
 Yarhouse, W. T.

Yarnall, Jesse

Zell, H. A.

Yohe, J. K., Jr.

## VISITORS

Ackley, J. O.  
Adams, J. V.  
Ainsworth, Bert R.  
Aivalotis, Robert  
Allen, John M.  
Allshouse, E. L., Jr.  
Alter, Forrest H.  
Anger, J. F.  
Aulbach, Ralph  
Ball, James B.  
Barnhart, C. H.  
Barr, J. C.  
Batchelar, John P.  
Bates, Charles  
Bishop, W. M.  
Black, A. L.  
Bogar, Stephen A.  
Bogovek, Joseph  
Borland, Bruce S.  
Bole, R. F.  
Bortz, James M.  
Braun, James F.  
Braun, John F.  
Broberg, F. M.  
Brown, W. E.  
Burriss, H. E.  
Callahan, D. E., Jr.  
Campbell, R. A.  
Capritz, Harry L.  
Carr, John L.  
Carr, M. L.  
Cattell, L. E.  
Cepuls, F. W.  
Chester, Charles J.  
Click, Harry  
Corlett, W. H.  
Cotton, G. A.  
Cox, Earl  
Crago, P. H.  
Crisman, S. W.  
Crittenden, P. L.  
Crocker, Albert E.  
Cruikshank, M. T.  
Cullison, J. A.  
Cunningham, H. L.  
Curtis, T. W.

Cusick, Andy  
Dahlstedt, J. A.  
Davis, R. E.  
Davis, W. B.  
Dawson, P. R.  
Day, Tom R., Jr.  
Dean, G.  
Dean, Robert  
De Wall, R. L.  
Diven, Francis  
Dore, Floyd F.  
Duff, J. Boyd, Jr.  
Dunham, Paul  
Dunn, C. A.  
Ebbage, Eugene  
Egger, A. J.  
Egly, John M.  
Eisele, H. P.  
Emsheimer, Louis  
Engel, L. W.  
Eperthener, A. L.  
Faison, L. H.  
Fleming, W. J.  
Freyvogel, Dr. Paul T.  
Gibson, G. P.  
Gilmore, A. L.  
Gilmore, R. A.  
Godard, C. L.  
Goebel, E. C.  
Goldstrom, C. F.  
Grady, M. P.  
Grance, H. J.  
Greys, John  
Griffin, G. P.  
Gumz, Fred A.  
Gunst, C. C.  
Hagen, Elmer F.  
Harrison, Bruce  
Harper, James W.  
Haupt, W. Paul  
Hauser, C. A.  
Heinricks, Walter  
Hemma, C. H.  
Herrington, A. W.  
Hess, R. A.  
Hicks, W. A.

|                        |                        |
|------------------------|------------------------|
| Hildebrand, S. H.      | Pry, W. Eugene         |
| Holt, James            | Purbaugh, C. A.        |
| Hopkins, J. W.         | Ramsey, H. F.          |
| Horrell, F. J.         | Ranck, James           |
| Howe, W. C., Jr.       | Rausch, C. C.          |
| Howells, F. M.         | Reynolds, D. E.        |
| Johnson, Edward        | Richardson, G. S.      |
| Johnson, F. M.         | Rodgers, G. K.         |
| Jones, A.              | Rohyans, A. V.         |
| Jones, A. A.           | Ross, C. C.            |
| Jones, R. E.           | Ryan, J. M.            |
| Kammski, John          | Samuels, J. T.         |
| Kelly, J. H.           | Sarchet, K. J.         |
| Ketler, C. P.          | Schmidt, Julius        |
| Kouche, N. J.          | Seidener, Robert S.    |
| Kramer, J. K.          | Sexton, E. P.          |
| Laird, George R.       | Shannon, S. G.         |
| Lambert, W. J.         | Shelkey, L. D.         |
| Lanahan, James K.      | Shourek, Theodore L.   |
| Ledwith, A. B.         | Simpson, Isaac         |
| Lenhard, A. W.         | Singler, Frank         |
| Lewis, Norman          | Singler, W. M.         |
| Lewis, S. B.           | Sipe, D. A.            |
| Little, H. M.          | Sixsmith, J. M.        |
| Lloyd, J. M.           | Sloan, J. R.           |
| Long, A. T.            | Snyder, George H.      |
| Longabaugh, J. R.      | Stanley, H. W.         |
| Lovett, S. C.          | Stevens, William B.    |
| Lumpp, R. J.           | Stradling, A. C.       |
| Lynch, Louis E.        | Street, Clayton K.     |
| Mackim, N. H.          | Struebbe, Harold G.    |
| Madina, R.             | Suffern, R. J.         |
| Manion, Herbert        | Talbert, John F., Jr.  |
| Martora, L. C.         | Taylor, C. R.          |
| Marzwick, Charles      | Thomas, Martin         |
| Mathieson, Robert, Jr. | Thomas, Theo, Jr.      |
| Mechling, R. B.        | Thompson, W. E.        |
| Miller, C. J.          | Thurman, J. W.         |
| Miller, J. S., Jr.     | Tudball, J. H.         |
| Munn, J. E.            | Tune, J. M.            |
| McCann, Daniel J.      | Turner, A. L.          |
| McKee, Charles         | Urban, C. E.           |
| McKinley, W. J.        | Van Wormer, G. M.      |
| O'Neill, W. H.         | Wallace, H. A.         |
| Osborne, H. C.         | Walther, George W.     |
| Palmquist, Emil L.     | Weis, Mrs. F. E.       |
| Parsi, H. C.           | Westermann, Richard    |
| Patterson, Walter M.   | Westermann, S. B.      |
| Pennington, F. W.      | Weyrick, John P.       |
| Perri, F.              | Williamson, A. G., Jr. |
| Pfundt, R. E.          | Williamson, Frank      |

Wilson, L. E.  
Wintrup, C. M.  
Witt, J. Ray  
Wood, V. V.

Woods, Arch  
Yeardley, Harry  
Yeck, A. L.  
Young, James L.

PRESIDENT: Gentlemen, may I have your attention, please? Mr. Weis, assisted by Mrs. Weis, in their usual characteristic and splendid manner, have provided a short entertainment which they will now present before we proceed with our regular program. Mr. Weis.

MR. WEIS: I understand we have a particularly fine program prepared for this evening so this part of the entertainment will be very short.

I am sure it will be a surprise for you to know that we finally have succeeded in landing one of the finest character performers in the country,—I do not say the Pittsburgh district, I say the country. Some of you may know him when you see him and others will know him when you hear his name. I am sure you will enjoy his entertainment. I take pleasure in presenting Sandy McTavish Moir.

(At this point Mr. W. B. Moir, Chairman of the Membership Committee of The Railway Club of Pittsburgh and Chief Car Inspector of the Pennsylvania Railroad Company at Pittsburgh, attired in Scotch costume, rendered an entertaining program of songs and monologue in Scotch dialect, which was enthusiastically received.)

PRESIDENT: Thank you very much Mr. and Mrs. Weis and Mr. Moir. In case any of you gentlemen do not know who the Scotchman is, I will enlighten you. He is Bill Moir, Chairman of the Membership Committee of this Club, and now you and I know why he likes to have some one else buy the drinks. (Laughter).

You may have noticed that, for this meeting at least, we rearranged the seating setup and I hope it has your approval. The nature of the main feature of our program tonight is such we thought we would be more comfortable if we sat facing the screen at the end instead of the side of the room and for that reason the seating arrangement has been changed.

Now, the roll call, as is customary, will be dispensed with because of the registration at the door, and if there are no objections we will also dispense with the reading of



the minutes of the preceding meeting. I think those minutes already are in booklet form and distributed.

Are there any announcements that you have to make at this time, Mr. Secretary?

SECRETARY: Nothing, Mr. Chairman.

PRESIDENT: I understand that we have quite a few applications for membership. They are not being presented, however, at this time because we are nearing the end of our fiscal year and those applicants will be presented for the incoming year. However, I would just like to say that we welcome those gentlemen as participants in the activities of this Club and we hope their association with us will be found well worth while, as the rest of us have found. Likewise, may I not extend a word of greeting to our guests that are present tonight. I am informed there are a number of guests among us and I want to say that you are entirely welcome. We are glad to have you here and want you to come back again.

Now, gentlemen, we come to the important feature of this meeting. I believe it is the part of the meeting that you are waiting for and I know that you will be glad if we will get on with the program because of the heat. We have been particularly fortunate in being able to secure what I understand to be the first industrial showing of this moving picture. It has been made by the United States Steel Corporation subsidiaries at considerable expense and I believe has only had one prevue. I am informed it has not been shown, generally, in a gathering such as this until this evening. Therefore, I repeat, we are very fortunate, indeed, in being thus favored and I feel we owe a debt of gratitude to the officials of the Steel Corporation for making it possible for us to have this opportunity. I think it is only right that I should say that the Steel Corporation is putting this picture on tonight without any cost whatever to the Railway Club. They are assuming the entire expense and I might tell you that there is quite some expense involved in connection with this presentation. The subject is: "Steel, Man's Servant." The presentation, for the moment at least, will be under the direction of Mr. J. H. Ainsworth. I will now ask Mr. Ainsworth to take charge of the meeting.

At this point Mr. J. H. Ainsworth made some introduc-

tory remarks and announced that Mr. F. A. Wickerham of the Metallurgical Department of Carnegie-Illinois Steel Corporation was present and would be glad to answer any questions after presentation of the motion picture.

## **STEEL—MAN'S SERVANT**

**Technicolor Motion Picture Shown Before the Railway Club of Pittsburgh by the Carnegie-Illinois Steel Corporation.**

Railroad men use Steel. Few other industries use more. Hence it is particularly appropriate to show you how it is made—how the wheels go 'round, as it were, for it is only human nature to like to look behind the scenes, particularly when you can see the color as well as the action.

The Technicolor camera men captured the most thrilling steps in steel making, the transformation which takes place in the changing of the ore into the many kinds of steel; the blending of the natural hues of the open pit ore mines and of the lake and of the sky.

Years ago a wonderful gift was made to the United States in the form of tremendous deposits of high grade iron ore, readily accessible in open pits after the over-burden was removed. The picture showed how this over-burden was stripped, how the ore was mined in the pits with gigantic shovels and how it is mined below the ground. Since 1895 more material has been moved in the Missabi Range than was moved during the construction of the Panama Canal. More than 232,000,000 cubic yards—a tremendous number of car-loads!

You have seen the scrap that you haul—and make—converted again into new steel in the open hearth and electric furnaces; refined in the hottest furnaces known to man. Never before has a picture been taken showing an electric arc crackling over a charge of scrap in an electric furnace, yet that is a beginning of steel for your discriminating use.

In the picture you saw beams being rolled; slabs for sheets, for plates and for strip; sections for rails and billets for wire. We could not show every detail in the manufacturing processes, but you would be interested to see how carefully the rolls which shape the sections are made; painstakingly ground to split thousandths to give the necessary accuracy to the material which you use.

You saw how a heavy rail section was rolled and how it was cut into standard rail lengths. You saw also the special provision made for heat treating and cooling rails. Special equipment eliminates the possibility of human error. For example, in the case of rail end hardening, electric clockwork controls the quenching time, assuring exactly the time required; no more, no less. It is through such care, plus equally close control in the manufacture of the steel itself, that rails are made to withstand the heavy, fast traffic of today.

Portrayed in color were the steps in the manufacture of a railroad axle; making the round, reheating it to exactly the right temperature, and then the massive forging equipment, operated by a skilled hammerman who takes pride in being able to set his hammer down on a watch crystal without breaking it. Step by step he shapes up the axle; first the journal, then the collar is forged on one end. And then he goes to work on the center section, working it down to shape, his crew meanwhile constantly turning the heavy round in a sling to assure that the whole piece is evenly and smoothly worked, that no flaws may develop in the finished piece to give you trouble at some later date. The work is repeated at the other end and away goes the rough forging to the machinist who turns it down to your specifications, ready for your inspectors.

Just as rails were improved, so too has the manufacture of locomotive and car wheels kept pace with the increases in loads and speeds. Wrought steel wheels, forged and rolled from solid blocks of steel, represent an important contribution of the steel industry to the railroads. You got a glimpse of the special equipment required to make these wheels—the 10,000 ton press used to shape the blank before the forging, rolling and machining operations. Wrought steel wheels meet your present day conditions, carrying loads unheard of a decade ago at speeds that would have seemed fantastic only a few years ago. Combining safety with low cost, such wheels play an important part in solving the problems of high speed transportation of freight and passengers.

The railroads and the steel industry are closely allied. Both have moved forward together. Twenty-five years ago, passenger and freight cars were almost entirely built of wood. Then steel construction began. Today railroad cars are built of steel. Steel itself is changing, keeping pace with



modern demands for ever better, ever stronger materials that will decrease costs and increase safety. And railroad engineers and designers are alert to take advantage of new developments in the steel industry, as evidenced by the steadily increasing use of corrosion-resisting, high tensile strength steels in freight and passenger car construction, locomotives and tenders, and all the multitude of equipment that constitutes a railroad system.

Corrosion formerly took heavy toll on railroad equipment. It was impossible to reduce sections until this problem was overcome. Copper-bearing steel cut down maintenance costs by greatly increasing corrosion resistance, thus increasing the life of all types of cars. But that alone was not enough. Dead weight had to be reduced, and the only way that could be done was by reducing the thickness of sections, for the weight of the steel itself cannot be changed. The development of high tensile strength steels which were highly resistant to corrosion made it possible to reduce sections thus achieving a major weight reduction.

Thus, through the use of Cor-Ten, developed in the United States Steel Corporation laboratories, freight cars of all types—the back-bone of any railroad—are now stronger, as well as lighter in weight. Payloads have been increased without an increase in motive power. Life of both passenger and freight equipment has been lengthened and maintenance costs greatly reduced. Similarly, Man-Ten, which combines high tensile strength with increased resistance to abrasion, has aided railroad designers in their work. Stainless steel, which defies corrosion and offers high strength at the same time, is playing an increasingly important part in railroad equipment, not only as trim, but also as exterior sheathing and as structural members as well.

These new steels can be handled in your shops without substantial changes in present equipment. They are rolled in standard sections, but their high tensile strength and resistance to corrosion makes it possible for you to use a lighter section, thus reducing dead loads and increasing payloads. They can be assembled as desired; by riveting, bolting, or welding. The designer has a free hand, and modern freight and passenger equipment is showing the effects of the progress made by the steel industry, which is constantly striving to do everything in its power to meet your needs.



Back of the Technicolor picture which you saw is a human organization; men who are working for you, working in your interest, and interested in your problems. Recall the many pictures of the laboratories and their equipment and think what it means to have 89 laboratories employing a couple of thousand men, all working on your problems. Those are some of the reasons why steel rails meet present day conditions, why wrought steel wheels stand up so well under modern traffic, why boiler tubes last longer and give less trouble, why engine frames stand the punishment they do without failure, why streamlined trains are able to make the speeds they do, why freight cars carry the loads they do at the new high speeds, and why equipment looks better and lasts longer.

Steel is truly man's servant, and particularly the servant of the railroad man. It was a pleasure to us to be able to show you this picture, and we want you to feel free at all times to call on us for co-operation.

PRESIDENT: If you are as thrilled as I am at that remarkable presentation, I think you will agree with me that our Subject Committee has made another big hit in our efforts to produce diversified and interesting subjects. Now, as Mr. Ainsworth has stated to you, Mr. Wickerham will be very glad to answer any questions that you may wish to ask.

Before the meeting ends, I shall ask one of our members to express adequately to these gentlemen and the United States Steel Corporation our appreciation for this presentation. I wish to mention at this time that the Secretary would like to have the names of the persons asking questions for our records. Mr. Wickerham.

MR. F. A. WICKERHAM: I do not know if there is much chance for questions because this has not been an attempt to make a technical presentation of steel manufacturing. We wanted to show, rather, the spectacular side of steel manufacture, but I will be glad to try to answer any questions.

MR. HENRY F. GILG: I wish to have permission to express my appreciation of having the opportunity to see this wonderful display. It was my good fortune to be present on the first Saturday of November, 1875, to see the

small five-ton converter at the Edgar Thomson (Note that this is spelled without a "p") used in the process of manufacturing rails. The first commercial rails produced at that mill were made on the first day of September, 1875. There were steel rails rolled before that time, but Mr. Carnegie sold rails to the company which owned that plant. That mill was, I believe, the first one in this country to roll steel rails, and the second mill was at Johnstown, Pennsylvania. Mr. Carnegie seemed to have produced better rails than the others, and took the business.

At one of our meetings about twenty-five years ago, I mentioned having seen an all-metal car in 1869. That was a passenger car on the Pittsburgh, Fort Wayne & Chicago Railroad. The car went out of use because they could not be handled when damaged in a wreck, because there was not the equipment for cutting them up that has been invented since then. When I was a night yard clerk on the Fort Wayne road, we had five-ton bottom drop hopper cars with rubber balls on the bolsters. Today we have steel cars of 70 tons or more capacity. The locomotives of that earlier day had a capacity of two hundred tons for a load. Locomotives now haul as much as 7,000 tons over the same road.

The presentation of this picture has been very interesting and brings back memories of the past which show what great men our steel mills and our railroads had to make such marvelous progress in the lifetime of a man.

PRESIDENT: Thank you Mr. Gilg. Are there any questions. As I understand, Mr. Gilg, you did not ask a question that you desired answered, is that right?

MR. GILG: That is right.

PRESIDENT: Are there any questions you gentlemen wish to ask Mr. Wickerham?

(No response).

If not, I would not like to see this meeting end without an expression of the pleasure of the officers of this Club at the wonderful turn-out tonight. It is remarkable and very encouraging. It speaks well for the future of the Club. While I am on that subject, I wish to mention that we were very glad today to receive letters from two very fine gentlemen who are Past Presidents of this Club, Mr. Forsberg

and Mr. Lanahan, expressing their sincere regret at not being able to be present with us tonight.

A few minutes ago I noticed a gentleman come in the door. He does not know it, and perhaps you do not either, but I am going to ask the "Railroad Poet," Mr. Mike Grady, of the Pennsylvania Railroad Company to say a few words. I think he is a machinist, I do not know. Some of you know him, but if you do not you should. You are going to meet him now. Mr. Grady.

MR. M. P. GRADY: Mr. President, Members of The Railway Club of Pittsburgh and their guests: Imagine my surprise, after a hard day in one of our large passenger engine houses, I found that there was a meeting of The Railway Club of Pittsburgh, and then, it was a further surprise that my good friend, your President, called on me for a few remarks.

Well I remember the first hockey game I ever saw in my life. It was many years ago, but I saw one of the gamest men that ever lived come out there and smack that thing,—I do not know what they called it in those days,—but I think he was one of the gamest hockey players that ever lived. That man is the President of this Club here tonight.

I want to congratulate the Program Committee on their wonderful program this evening, the initial showing of this picture of steel manufacture. I knew the great President of the United States Steel Corporation, Ben Fairless, back in the days when good beer was a nickel and good whiskey was a dime.

Now, I wonder just what a man should say when he has been here six or seven times before a group of this kind and perhaps twenty or thirty times before many of you, but when this gentleman called me "great," or something like that, it reminds me of a little verse which came into my mind and I put it on paper just a few weeks ago. It goes something like this:

When I was twenty I knew I was great,  
Sang my own praises both early and late.  
When I was thirty, I wasn't so sure,  
Knew there were some ills that I couldn't cure.  
Now in my fifties I wonder if I



Know quite as much as the run of mine guy.  
I've figured it out and find this to be so,  
It took years to discover how little I know.

Gentlemen, on your program tonight, I hope I won't find myself in the same position as another Irishman found himself in who was concerned about the late illness of the Pope. He was much concerned about the Pope's illness and every time he met his friend he would talk about that and finally it became very obnoxious to him. One day one of his friends said: "Now, Pat, the Pope is a holy old man and has lived on earth about eighty years and done a lot of good in the world but when his time comes to go he will go. There have been two hundred and fifty-three Popes since St. Peter, so there is nothing to be alarmed about and do not be alarmed." The Irishman listened to him and was very much disturbed. He finally answered him and said: "There is a lot to be alarmed about and there is a lot to be concerned about. Suppose Roosevelt appoints a Protestant."

I cannot talk to you about business because I know there are a lot of railroad men who do not understand these figures and statistics I have in my mind right now. Many years ago, during the war, when I was night roundhouse foreman at the Allegheny Engine House, I had an assistant whose name was "Flat Wheel." He knew I was a proud Republican and he was one of the greatest Democrats I ever came across. I thought I would have a little fun with him one day. It was just the day before we went into Government Control. I said to him, "Tomorrow we will go under Government Control." He said, "What about it?" "Well," I said, "What do you say about that?" He said, "Now, listen Mike; wont you be the Night Foreman here?" I said, "Yes." He said, "Wont I be your Assistant?" I said, "That's right." He said, "Wont these same fellows working under me now be working here after Government Control starts." I said, "That is right." He said, "Then, how will that make any difference." I said, "Wait until the Democrats get into the saddle and cut the wages about seventy-five per cent." He went on a little bit and scratched his head; then he said, "Hell, I don't get that much."

We are in hard times and are having considerable trouble and some conflict. Some of us are worrying a whole



lot, but we have got to play the game. I have in mind a brother Elk of mine who was going to an Elk's party and figured it was going to be quite a party so he did not bring his own automobile. He was a clever sort of guy and he got some other fellow to pour him out in front of his house about two o'clock in the morning. Then he took a very careful survey of things and went very quietly up to the front door, found the keyhole, opened the door quietly and got in without raising any commotion. He took his shoes off, crept upstairs and found he had not stirred up anything so far, so he sneaked in the bedroom and got his pajamas off the foot of the bed. He went into the bathroom and then he remembered that in getting out of the car he had slipped and bumped his hip slightly. He looked in the long mirror in the door and saw a little blood there. In the medicine cabinet he found some adhesive tape and cotton. He stood close in front of the mirror and proceeded to patch himself up. Then he got into his pajamas and got into bed without causing his wife to stir a bit; she was still sleeping. The next morning she wakened him up and got him up on his feet. Then she said, "You must have been drinking when you got in here last night." He said, "What are you talking about? I was all right. I came in and did not wake you up or anything like that." She said, "I know that, but how about all that adhesive tape and cotton on the mirror in the bathroom?"

You know you have to be a little concerned about the other fellow no matter how hard times are. Most of us fellows are on the payroll and getting along pretty good, and we must look out for the other fellow. A lot of fellows have the wrong idea about taking care of the other fellow. It is just like the case of a Jewish fellow who was taken quite ill and he called three or four doctors but they could not diagnose his case. Finally he was taken to the hospital and after he was in the hospital a couple of days he broke out in a rash all over. They knew right way what was the matter with him then; that he had smallpox. He grew steadily worse and finally became seriously ill. A Sister in the hospital came to him and said, "Mr. Cohen, you are pretty sick." He said, "Yes, I am; I have smallpox." She said, "I wonder if you want a spiritual adviser. We will get you anyone you want." He thought a little bit and then

said, "Get me a Catholic Priest." She said, "All right," and started towards the door. Then she stopped, turned and said, "Mr. Cohen, we will get you a Catholic Priest, but your request is unusual. I thought, perhaps, you would ask for a Rabbi." He said, "Would you think I want the Rabbi to get the smallpox?"

We have been through the depths of one of the greatest depressions this country has ever known and I do not know of any branch of industry that has taken the wallop that the railroads have taken. However, there is a better day coming for us that will make us better and greater than we ever were before. I have in mind, as an illustration, the case of that great writer Fannie Hurst. When she wrote her eighty-fifth article for the Saturday Evening Post she folded it up, put it in a manila envelope, addressed it, took it down and placed it in the mail box. The same thing happened to that eighty-fifth article that had happened to the eighty-four she had sent before; it came back to her; they had no use for it. Then she wrote the eighty-sixth article and it did not come back. Instead of it coming back a check came back written in four figures. Then there were demands that came from all over the country from all sorts of periodicals for some of her articles so that she then gathered up the different things she had previously written and sold them for a lot of money. So it is with us. We put in a long hard period of time trying to make ourselves better and trying to do a better job in the railroad industry. We have thought about a lot of things we cannot put into effect just now, but that day is coming, just as Fannie Hurst's day came, when we will resurrect those fine things we thought about. We will put them into effect and we will make this country one of the greatest and grandest railroad services it has ever known. I know of no place where that can be done than on these rails of steel that penetrate to every part of this continent. And, these railroad men that have the bulldog tenacity to stick and keep on trying will finally win success.

It has been a pleasure and a privilege to have been with you gentlemen tonight. May I leave you with this little bit:

May the joys of peace and comfort  
Come home to you and yours,  
May our lives entwine with friendship  
As long as life endures;  
May all your faults be written  
In the sands when it's raining hard,  
Is the wish to you this evening  
From the heart of an Irish Bard.

Thank you.

PRESIDENT: Thank you very much, Mr. Grady. Now you all understand why Mike Grady is known, more or less nationally, as the "Railroad Poet." There is one thing about Mike I always admired and that is his willingness to always respond and assist on any program when he is requested to do so and I think he has carried out his part adequately here tonight.

Before calling on Mr. R. C. Miller, General Superintendent of the Pennsylvania Railroad, to express to the Steel Corporation and their representatives who have so generously presented us with this technicolor motion picture display on our program tonight, I would just like to remind you again that this is the last meeting of the Summer. Our next meeting will be in September, notice of which will be sent you in due time. We hope to have Mr. Cameron of the Ford Company speak to us at this meeting. I hope you all have a very pleasant Summer vacation and that we will all be around again when September comes and become associated in good fellowship such as has been so adequately evidenced here tonight. We will now hear from Mr. Miller.

MR. R. C. MILLER: Mr. President and friends: From what you and I know of the condition of the steel industry in Pittsburgh today I am almost compelled to suggest that perhaps the picture that we have been looking at is the history of a lost art. If conditions get much worse, it might be a good idea to preserve this film so that posterity might see, in the future, what we used to do in the past.

Seriously, however, that was a great picture; not only interesting and instructive, but really a liberal education. Few of us would ever have the opportunity to follow the iron ore from the mines to the finished product, and even

though we did, that which we saw would be so unusual, so unique, so colossal and so wonderful that we could digest but a very small part of it. This picture has come to us in such a way that we have been able to see what it is all about. So, Mr. Ainsworth and Mr. Wickerham, on behalf of The Railway Club of Pittsburgh, may I thank you for bringing this picture to us. And, may I record further our appreciation of the generosity of the United States Steel Subsidiaries in making it possible for us to view what I consider a great presentation. I consider this to be really a great event. Further, may I take this opportunity to congratulate the United States Steel Corporation and its Subsidiaries in being able to work up such a wonderful picture, to show the many things that it does show and to make such an impression on the layman's mind; showing what they are doing in the manufacture, not only of their own products, but the products of steel making generally in this great steel age. I thank you.

PRESIDENT: Is there anything else to come before the meeting tonight? If not, I should just like to announce that lunch, as usual, will be served by the Club and this time in one of the rooms off the main lobby. If there is nothing further to come before us now, I will say goodnight and hope to see you all next September. Thank you.

(There being no further discussion, ON MOTION, the meeting was adjourned to the lunch tables).

J. D. CONWAY, Secretary.





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SEPTEMBER 23, 1938.

No. 8.

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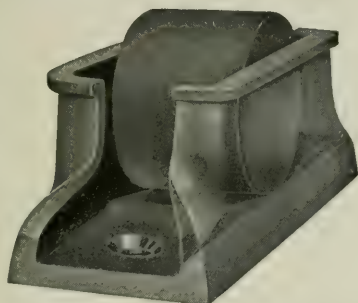
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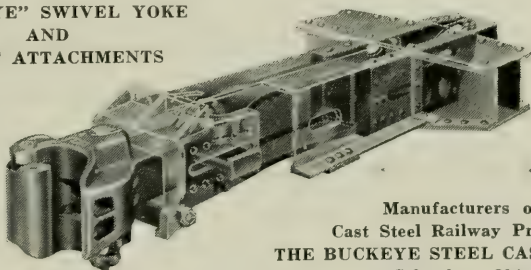


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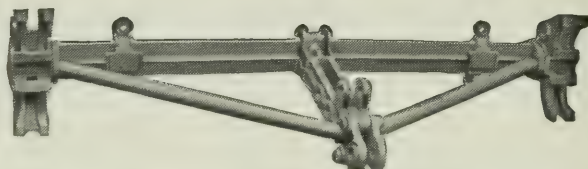
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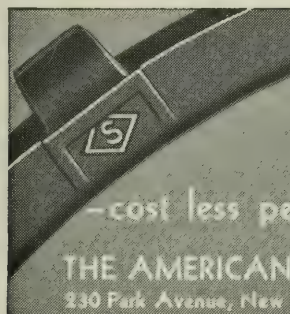
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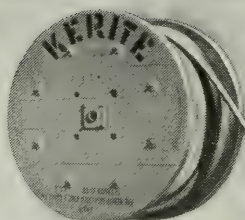
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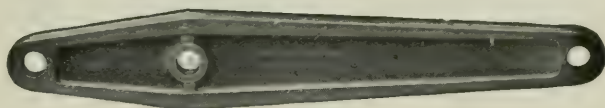
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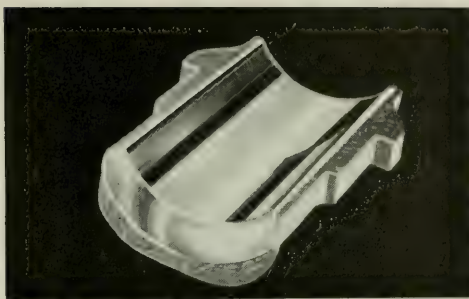
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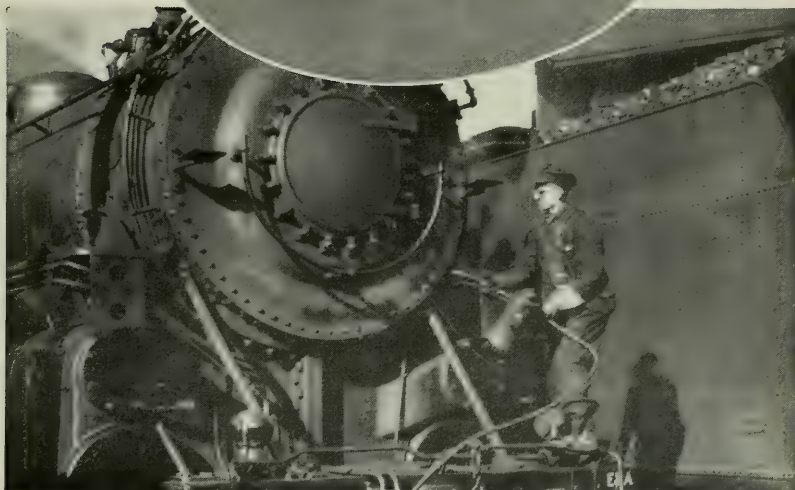
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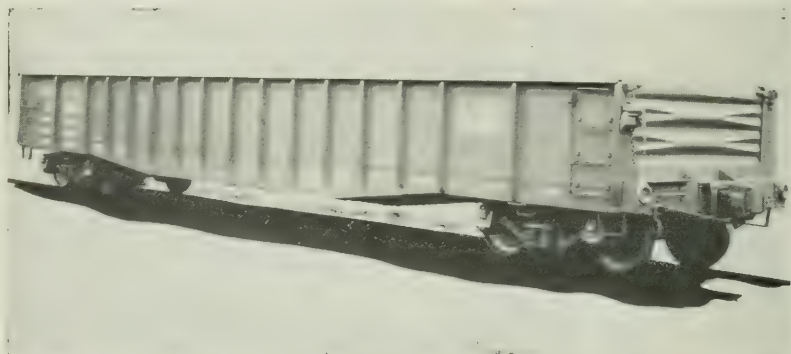
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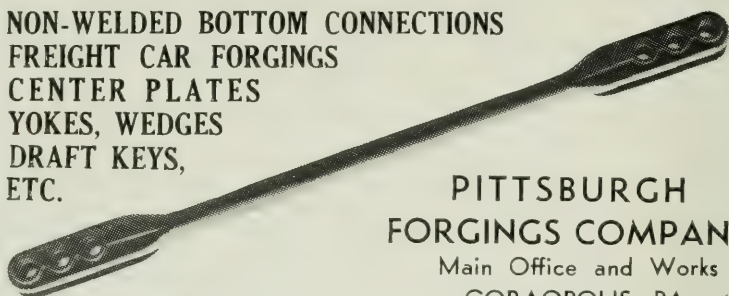
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Organized October 18, 1901

Vol. XXXVII.  
No. 5

**Pittsburgh, Pa., Sept. 23, 1938**

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 VINCENT KROEN, Vice Chairman, Supervr., Express Service, Penna. R. R., Pgh., Pa.  
 W. C. BUREL, Master Mechanic, Western Allegheny Railroad, Kaylor, Pa.  
 H. E. CHILCOAT, Gen. Mgr. of Sales, Koppel Div., Pressed Steel Car Co., Inc., Pgh., Pa.  
 F. L. FOSTER, Supt. Freight Transportation, P. & L. E. R. R. Co., Pittsburgh, Pa.  
 J. S. LANAHAN, Vice President, Fort Pitt Malleable Iron Company, Pittsburgh, Pa.  
 JAMES NAGEL, Asst. General Superintendent, Montour Railroad Company, Coraopolis, Pa.

## FINANCE COMMITTEE:

M. A. SMITH, Chairman, General Manager, P. & L. E. R. R. Co., Pittsburgh, Pa.  
 J. B. DIVEN, Superintendent Motive Power, The Pennsylvania Railroad, Pittsburgh, Pa.  
 F. J. RYAN, District Representative, Detroit, Toledo & Ironton Railroad, Pittsburgh, Pa.  
 C. E. CATT, Division Accountant, B. & O. R. R. Co., Pittsburgh, Pa.  
 G. W. HONSBERGER, Transpn. Mgr., Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

## ADVERTISING COMMITTEE:

J. H. JAMES, Chairman, Purchasing Agent, P. & L. E. R. R. Co., Pittsburgh, Pa.  
 J. C. SHINGLEDECKER, Supervisor of Service Stations, The Pennzoil Co., Pittsburgh, Pa.  
 CHARLES M. WHEELER, Sales Engineer, Union Switch & Signal Co., Swissvale, Pa.

## MEMBERSHIP COMMITTEE.

W. B. MOIR, Chairman, Chief Car Inspector, The Pennsylvania Railroad, Pittsburgh, Pa.  
 LLOYD SUTHERLAND, Vice Chair., Gen. Storekeeper, P. & L. E. R. R., McKees Rocks, Pa.  
 T. FITZGERALD, Vice Pres. & Gen. Mgr., Pittsburgh Railways Co., Pittsburgh, Pa.  
 G. C. HARPER, General Superintendent, Montour Railroad Company, Coraopolis, Pa.  
 FRANK A. JARRES, Assistant Storekeeper, B. & O. R. R. Co., Pittsburgh, Pa.  
 C. S. LEET, Assistant General Manager, B. & L. E. R. R. Co., Pittsburgh, Pa.  
 C. R. MEGEE, Dist. Mgr. Car Service Div., Association of American Railroads, Pgh., Pa.  
 R. C. McINTYRE, Supt. Motive Power, Union Railroad Company, East Pittsburgh, Pa.  
 H. C. PRINGLE, Vice Pres. & Supt., Monongahela Connecting R. R. Co., Pittsburgh, Pa.  
 S. B. RILEY, General Superintendent, P. & W. Va. Ry. Co., Pittsburgh, Pa.  
 JOHN B. WRIGHT, Asst. Vice President, Westinghouse Air Brake Co., Wilmerding, Pa.  
 F. H. EATON, Sales Engineer, American Car & Foundry Company, Pittsburgh, Pa.  
 C. W. GOTTSCHALK, Asst. Traffic Manager, Jones & Laughlin Steel Corp., Pgh., Pa.  
 THOMAS R. FITZPATRICK, Freight Traffic Mgr., P. & L. E. R. R. Co., Pittsburgh, Pa.  
 P. W. HEPBURN, Sales Engineer, Gulf Oil Corporation, Pittsburgh, Pa.  
 C. W. TRUST, Asst. Traffic Mgr., U. S. Steel Corporation Subsidiaries, Pittsburgh, Pa.

## PAST PRESIDENTS:

|                        |                                  |
|------------------------|----------------------------------|
| *J. H. McCONNELL.....  | October, 1901, to October, 1903  |
| *L. H. TURNER.....     | November, 1903, to October, 1905 |
| *F. H. STARK.....      | November, 1905, to October, 1907 |
| *H. W. WATTS.....      | November, 1907, to April, 1908   |
| *D. J. REDDING.....    | November, 1908, to October, 1910 |
| *F. R. McFEATTERS..... | November, 1910, to October, 1912 |
| *A. G. MITCHELL.....   | November, 1912, to October, 1914 |
| *F. M. McNULTY.....    | November, 1914, to October, 1916 |
| *J. G. CODE.....       | November, 1916, to October, 1917 |
| *D. M. HOWE.....       | November, 1917, to October, 1918 |
| *J. A. SPIELMAN.....   | November, 1918, to October, 1919 |
| H. A. MAXFIELD.....    | November, 1919, to October, 1920 |
| FRANK J. LANAHAN.....  | November, 1920, to October, 1921 |
| *SAMUEL LYNN.....      | November, 1921, to October, 1922 |
| *D. F. CRAWFORD.....   | November, 1922, to October, 1923 |
| *GEO. D. OGDEN.....    | November, 1923, to October, 1924 |
| A. STUCKI.....         | November, 1924, to October, 1925 |
| *F. G. MINNICK.....    | November, 1925, to October, 1926 |
| G. W. WILDIN.....      | November, 1926, to October, 1927 |
| E. J. DEVANS.....      | November, 1927, to October, 1928 |
| W. S. McABEE.....      | November, 1928, to October, 1929 |
| E. W. SMITH.....       | November, 1929, to October, 1930 |
| LOUIS E. ENDSLEY.....  | November, 1930, to October, 1931 |
| *JOHN E. HUGHES.....   | November, 1931, to October, 1932 |
| F. I. SNYDER.....      | November, 1932, to October, 1933 |
| C. O. DAMBACH.....     | November, 1933, to October, 1934 |
| R. H. FLINN.....       | November, 1934, to October, 1935 |
| R. P. FORSBERG.....    | November, 1935, to October, 1936 |
| E. A. RAUSCHART.....   | November, 1936, to October, 1937 |

\*—Deceased.

Meetings held fourth Thursday of each month except June, July and August.

# PROCEEDINGS OF MEETING

SEPTEMBER 23, 1938

The meeting was called to order at the Fort Pitt Hotel at 7:00 o'clock P. M., Eastern Standard Time, with President G. M. Sixsmith in the Chair.

Registered attendance, 390, as follows:

## MEMBERS

|                    |                         |
|--------------------|-------------------------|
| Adams, Frank W.    | Chittenden, A. D.       |
| Allen, Earl M.     | Christy, F. X.          |
| Allison, John      | Cipro, Thomas           |
| Ames, L.           | Clardy, W. J.           |
| Anderson, G. S.    | Clark, C. C.            |
| Angel, A. J.       | Clowes, W. K.           |
| Aulbach, A. J.     | Colbert, J. T.          |
| Babcock, Frank H.  | Condon, W. H., Jr.      |
| Bagaley, W. W.     | Conway, J. D.           |
| Balla, J. A.       | Coombe, A. B.           |
| Barr, H. C.        | Courtney, H.            |
| Batchelar, E. C.   | Crawford, Burt H.       |
| Baumann, E. G.     | Crenner, J. A.          |
| Beeson, H. L.      | Cudworth, H. D.         |
| Beck, C. H.        | Dambach, C. O.          |
| Beitsch, George F. | Daugherty, W. A.        |
| Beltz, J. D.       | Davis, Charles S.       |
| Bender, H. P.      | Dean, E. E.             |
| Berg, Karl         | Dean, W. A.             |
| Berg, Max          | Dickson, K. B.          |
| Beswick, R. M.     | Diven, J. B.            |
| Binau, R. J.       | Edsall, Stanley D.      |
| Black, C. R.       | Edwards, W.             |
| Blyth, F. G.       | Endsley, Prof. Louis E. |
| Bowery, Frank J.   | Evans, Charles S.       |
| Boyd, John R.      | Eysmans, J. L., Jr.     |
| Britt, T. E.       | Fair, J. M.             |
| Bryant, L. J.      | Farlow, G. B.           |
| Buchanan, C. C.    | Farmer, C. C.           |
| Buckley, William   | Ferguson, William B.    |
| Bull, R. S.        | Finger, P. E.           |
| Burel, W. C.       | Flinn, R. H.            |
| Button, L. R.      | Forsberg, R. P.         |
| Campbell, F. R.    | Forsythe, George V.     |
| Campbell, W. T.    | Frauenheim, Pierce H.   |
| Carlson, L. E.     | Friend, E. F.           |
| Carr, T. W.        | Galbraith, James R.     |

Geiser, W. P.  
 George, W. J.  
 Gibson, Sam D.  
 Gilg, Henry F.  
 Gillespie, J. P.  
 Glaser, J. P.  
 Gleeson, H. L.  
 Goda, P. H.  
 Golden, A. B.  
 Goldstrom, G. E.  
 Goodlin, C. L.  
 Goodwin, A. E.  
 Goss, John L.  
 Gray, M. L.  
 Griest, E. E.  
 Grieve, Robert E.  
 Gross, John  
 Groves, W. C.  
 Guinnip, M. S.  
 Halberg, E. J.  
 Hamilton, R. F.  
 Hamilton, W. H.  
 Hance, R. H.  
 Hansen, William C.  
 Hastings, David T.  
 Hassler, E. S.  
 Haupt, H. H.  
 Hautman, Hugo  
 Hayward, Carlton  
 Heer, Walter  
 Heinz, W. J.  
 Hess, Charles A.  
 Hicks, E. S., Jr.  
 Hilstrom, A. V.  
 Holbrook, E. L.  
 Holmes, E. H.  
 Hoopes, R. E.  
 Hykes, W. H.  
 Irwin, R. D.  
 Jarres, F. A.  
 Johnson, J. W.  
 Kearfott, W. E.  
 Kelly, L. J.  
 Kentlein, John  
 Klingensmith, W. S.  
 Koch, Edward J.  
 Kroen, Vincent  
 Kroske, J. F.  
 Lanahan, Frank J.  
 Lanahan, J. S.  
 Larson, W. E.  
 Leban, J. L.  
 Lee, L. A.  
 Leet, C. S.  
 Lewis, Benjamin  
 Lewis, N. F.  
 Lincoln, R. B.  
 Long, R. M.  
 Lowry, William F., Jr.  
 Lundeen, Carl J.  
 Maliphant, C. W.  
 Mannion, M. F.  
 Matchett, M. K.  
 Megee, Caleb R.  
 Mellett, Dan D.  
 Metzgar, C. L.  
 Millar, C. W.  
 Miller, R. E.  
 Mitchell, W. S.  
 Moir, W. B.  
 Monk, J. Thomas  
 Moore, Donald O.  
 Morgan, Homer C.  
 Morris, J. D.  
 Mowry, James G.  
 Mulligan, M.  
 Murphy, D. L.  
 Murray, C. C.  
 McCormick, E. S.  
 McCrossin, C. D.  
 McCully, D. L.  
 McFetridge, W. S.  
 McHail, J. L.  
 McKim, Hollis  
 McKinley, John T.  
 McKinstry, C. H.  
 McLaughlin, H. B.  
 McTighe, B. J.  
 Nagel, James  
 Nathan, W. S.  
 Nichols, Samuel A.  
 Nicklas, Chester J.  
 Noble, J. A.  
 Noonan, Daniel  
 Paisley, F. R.  
 Peebles, A. T.  
 Pickard, S. B.  
 Ramsey, A. Milne  
 Rau, W. R., Jr.  
 Read, A. A.



|                        |                       |
|------------------------|-----------------------|
| Reagan, H. V.          | Suttle, Albert H.     |
| Richardson, H. R.      | Sutton, K. B.         |
| Roberts, E. L.         | Sutton, R. C.         |
| Robinson, L. L.        | Swenk, Raymond        |
| Rumbarger, F. A.       | Swope, B. M.          |
| Rushneck, George L.    | Sykes, A. H.          |
| Rutter, H. E.          | Taylor, H. D.         |
| Ryan, D. W.            | Terkelsen, B.         |
| Ryan, Frank J.         | Terry, Edward         |
| Sarchet, Roger         | Teskey, Dr. Walter J. |
| Schadt, A. D.          | Thomas, George P.     |
| Schiller, John         | Tomasic, N. M., Jr.   |
| Schrecongost, C. P.    | Trautman, H. J.       |
| Schweitzer, A. C.      | Trump, Perry          |
| Scudder, D. F.         | Tryon, Ira D.         |
| Searles, E. J.         | Tyler, B. W.          |
| Seivard, A. M.         | Unger, Dr. J. S.      |
| Sekera, C. J.          | Urtel, E. J.          |
| Severn, A. B.          | Van Blarcom, W. C.    |
| Shea, Joseph H.        | Van Vranken, S. E.    |
| Shepherd, W. B.        | Van Woert, F. E.      |
| Sheridan, T. F.        | Vollmer, Karl L.      |
| Shingledecker, John C. | Wallace, O. T.        |
| Shull, C. O.           | Warfel, J. A.         |
| Sixsmith, G. M.        | Weis, F. E.           |
| Smith, G. M.           | West, Troy            |
| Snyder, F. I.          | Wheeler, C. M.        |
| Sommers, W. C.         | Wickerham, F. A.      |
| Stack, John E.         | Widmyer, Robert G.    |
| Steigerwalt, R. W.     | Wiland, O. M.         |
| Steiner, P. E.         | Wilkins, Harry        |
| Stemen, E. M.          | Wilson, James R.      |
| Stevens, L. V.         | Wilson, Walter H.     |
| Stevenson, H. G.       | Winslow, G. W.        |
| Stewart, C. D.         | Woods, Arch H.        |
| Stewart, J. C.         | Woods, G. M.          |
| Stoffregen, Louis E.   | Woodward, R.          |
| Stoecker, J. P.        | Wright, John B.       |
| Stucki, A.             | Wyke, J. W.           |
| Stype, W. G.           | Wynne, F. E.          |
| Sudell, D. W.          | Yarnall, Jesse        |
| Sutherland, Lloyd      | Yohe, J. K., Jr.      |
| Zell, Harry A.         |                       |

## VISITORS

|                   |                 |
|-------------------|-----------------|
| Adams, P. E.      | Angerman, J. C. |
| Alter, Forrest H. | Arnold, J. S.   |
| Anderson, B. E.   | Baer, Martin C. |

|                     |                       |
|---------------------|-----------------------|
| Barnum, H. M.       | Horber, F. W.         |
| Berkins, Howard     | Hyland, E. C.         |
| Black, A. L.        | Johnson, J. P.        |
| Brand, Leslie       | Jones, R. E.          |
| Braun, J. F.        | Kaney, E. M.          |
| Burriss, H. E.      | Kennedy, M.           |
| Cameron, W. J.      | Ketler, C. P.         |
| Carr, M. L.         | Ketterer, C. L.       |
| Carroll, A. E., Jr. | Ketterer, Ralph L.    |
| Carroll, F. J.      | Kloman, Charles A.    |
| Clarke, Allan       | Knoff, David R.       |
| Cole, Walter        | Kramer, George, Jr.   |
| Conner, E. C.       | Kramer, J. Kenneth    |
| Cooper, M. D.       | Laird, G. R.          |
| Criswell, H. J.     | Lee, Henry H., Jr.    |
| Curto, Frank        | Lewis, S. B.          |
| Dahlinger, A. C.    | Lindberg, Thomas F.   |
| Dash, Maurice       | Lindner, John G.      |
| Davis, Claude E.    | Loeb, F. S.           |
| Davis, R. E.        | Logan, John R.        |
| Davis, William B.   | Lohr, J. D.           |
| Dawson, P. R.       | Long, Harry P.        |
| Dean, G. M.         | Lumpp, Ray J.         |
| DeWerth, A. F.      | Marinchak, Mike J.    |
| Ducosky, Peter      | Melody, James C.      |
| Duff, S. B.         | McKee, Charles        |
| Dunbar, E. L.       | McKinley, W. J.       |
| Edwards, E. R.      | McKinstry, Clair M.   |
| Elasko, Andrew      | Nagel, Albert H.      |
| Fisher, G. Edward   | Nagel, James, Jr.     |
| Forrest, J. C., Jr. | Palmquist, Emil L.    |
| Fox, P. D.          | Peterson, E. C.       |
| Fox, Raymond        | Phillips, F. C.       |
| Francis, W. T.      | Phillips, William H.  |
| Friend, R. A.       | Provost, Sam, Jr.     |
| Gardner, F. C.      | Provost, William J.   |
| Gardner, Henry      | Quinlan, R. R.        |
| Goldstrom, Carl F.  | Ramsey, Mrs. A. Milne |
| Graybigle, J. H.    | Reagan, Philip H.     |
| Grego, John         | Reed, J. E.           |
| Gross, M. A.        | Reynolds, D. E.       |
| Handke, W. H.       | Ritchey, J. C.        |
| Hartung, George C.  | Robinson, H. J.       |
| Hassler, Edward G.  | Rudolph, H. V.        |
| Haupt, W. Paul      | Rush, Frank           |
| Hayford, B. I.      | Schauers, R.          |
| Hellmann, Henry     | Scherz, Arnold        |
| Hellman, Kurt       | Schmid, H. W., Jr.    |
| Hollis, Samuel D.   | Schmid, W. L.         |
| Hopkins, J. W.      | Seivard, L. L.        |

Shoemaker, R.  
 Sixsmith, J. M.  
 Sixsmith, W. L.  
 Shannon, W. R.  
 Shawhan, R. L.  
 Sheparson, F. C.  
 Simpson, Isaac  
 Snyder, H. DeL., Jr.  
 Stauffer, Oliver G.  
 Stewart, R. J.  
 Stewart, W. R.  
 Street, C. K.

Taylor, C. R.  
 Thomas, Edgar C.  
 Thomas, M. F.  
 Thomas, Robert W.  
 Umstead, Edward  
 Unger, W. S.  
 Vollmer, Paul F.  
 Wensel, M. L.  
 Wiley, C. F.  
 Wilson, George P.  
 Winters, M. T.  
 Wright, J. M.

PRESIDENT: I would like first to comment on this wonderful attendance this evening, which speaks well for the continued interest in the affairs of our organization, and I think can be taken as a personal tribute to our guest speaker on this occasion, and as a courtesy to him we will be as brief as possible in the regular proceedings in order that he may have as much time as he desires to devote to his part of the program.

As usual we will dispense with the roll call in view of the registration cards signed at the door, and likewise, we will dispense with reading the minutes of our previous meeting because they are, as you know, printed in booklet form and already in the hands of our membership.

Mr. Secretary, are there any new proposals for membership?

SECRETARY: Mr. President, and gentlemen, we have the following proposals for membership:

Beck, C. H., General Sales Manager, Westinghouse Air Brake Company, Wilmerding, Pa. Recommended by T. E. Britt.  
 Binau, R. J., Engine House Foreman, B. & O. R. R. Co., 418 E. Brady Street, Butler, Pa. Recommended by T. E. Britt.  
 Coleman, William E., T. & S. Apprentice, Pennsylvania Railroad, 2405 Jenny Lind Street, McKeesport, Pa. Recommended by J. M. Fair.  
 Croft, John H., Manager, City Ice & Fuel Co., 5550 Claybourne Avenue, Pittsburgh, Pa. Recommended by W. K. Clowes.  
 Eberhart, James A., Chief Clerk to District Storekeeper, B. & O. R. R. Co., Apartment 309 Lebanon Hall, Mt. Lebanon, Pittsburgh, Pa. Recommended by F. A. Jarres.  
 Garrigan, Walter E., Sales Representative, The Okonite Company, Gulf Building, Pittsburgh, Pa. Recommended by E. M. Damrau.  
 Goss, John L., Chief Clerk—11th Street, Pennsylvania Railroad, 2819 Sigsby Street, Erie, Pa. Recommended by G. M. Sixsmith.  
 Hawes, William C., Car Service Agent, B. & L. E. R. R. Co., Greenville, Pa. Recommended by C. S. Leet.  
 Johnston, E. F., Secretary and General Sales Manager, Wolfe Brush Company, 634 Highland Avenue, Bellevue, Pittsburgh, Pa. Recommended by T. E. Britt.  
 Koch, Edward J., Supervising Engineer, Federal Laboratories, Inc., 322 Virginia Avenue, 19th Ward, Pittsburgh, Pa. Recommended by H. C. Barr.  
 Martoi, L. C., Supervisor—Track, Pennsylvania Railroad, 112 Virginia Avenue, Aspinwall, Pa. Recommended by B. W. Tyler, Jr.

Mellett, D. D., General Superintendent, The Holmes Construction Company, 224 Ninth Street, Aspinwall, Pittsburgh, Pa. Recommended by G. M. Sixsmith.

Palmer, C. D., Commercial Manager, Pittsburgh Railways, 435 Sixth Avenue, Pittsburgh, Pa. Recommended by T. J. Fitzgerald.

Perry, J. L., President, Carnegie-Illinois Steel Corporation, 434 Fifth Avenue, Pittsburgh, Pa. Recommended by J. D. Conway.

Peterson, W. C., Engineer of Distribution, Pittsburgh Railways, 915 Rossmore Avenue, Brookline, Pittsburgh, Pa. Recommended by R. S. Bull.

Solomon, Edward L., President and Treasurer, Max Solomon Company, Oliver Building, Pittsburgh, Pa. Recommended by T. E. Britt.

Spalding, Lawrence, Valuation Engineer, B. & L. E. R. R. Co., Greenville, Pa. Recommended by W. S. McFetridge.

Sutton, R. C., Signal Engineer, Pittsburgh Railways Company, 1449 Bellaire Place, Brookline, Pittsburgh, Pa. Recommended by R. S. Bull.

Sweitzer, A. C., Assistant Traffic Manager, U. S. Steel Corporation Subsidiaries, 217 Bon Air Avenue, Pittsburgh, Pa. Recommended by J. W. Johnson.

Wiland, O. M., Assistant Superintendent Telegraph and Signals, Pennsylvania Railroad, Pennsylvania Station, Pittsburgh, Pa. Recommended by C. M. Wheeler.

Wolfe, Jacob, General Superintendent of Yards, Max Solomon Company, Oliver Building, Pittsburgh, Pa. Recommended by T. E. Britt.

Woods, Arch H., Salesman, E. M. Hill Lumber Company, 2601 Penn Avenue, Pittsburgh, Pa. Recommended by T. E. Britt.

**PRESIDENT:** If any of the gentlemen, whose names the Secretary has just read, are in the room, we would like to take advantage of this opportunity to extend to them a cordial welcome and express the hope that they will find their association with us well worth while.

Mr. Secretary, are there any announcements or communications?

**SECRETARY:** One of the sad features which comes to us and which is not very pleasant is to present the names of members whose passing has occurred since our last meeting—John D. McClintock, Manager, Injector Department, William Sellers & Company, Inc., Philadelphia, Pa., joined the Club April 22, 1910, died June 4, 1938, and Frank E. Taplin, Chairman of the Board, P. & W. Va. Ry. Co., joined the Club November 23, 1933, died June 7, 1938.

**PRESIDENT:** We regret the passing of these members and you will note that one of them has been a member of this Club since, I believe the Secretary said, 1910, and as is our usual procedure, a suitable memorial minute will appear in the proceedings of this meeting.

We must now give consideration to nominations to fill the various vacancies in our organization for the coming year. In accordance with Article VI of our Constitution, the President appointed a Nominating Committee of five members, and this Committee at a meeting on September 13, 1938, after several hours of careful deliberation agreed upon a slate that I believe will meet with the whole-hearted endorsement of our



membership, at least, I hope so. This Nominating Committee is composed of Frank J. Lanahan, Chairman; R. H. Flinn, R. P. Forsberg, E. J. Searles and T. E. Britt, and I will now ask the Chairman of that Committee to make his report.

### **REPORT OF NOMINATING COMMITTEE**

FOR PRESIDENT: J. D. Beltz, Superintendent, B. & O. R. R. Co., Pittsburgh, Pa.

FOR FIRST VICE PRESIDENT: Karl Berg, Superintendent Motive Power, P. & L. E. R. R. Co., McKees Rocks, Pa.

FOR SECOND VICE PRESIDENT: J. W. Johnson, Superintendent, Railway Express Agency, Inc., Pittsburgh, Pa.

FOR SECRETARY: J. D. Conway.

FOR TREASURER: E. J. Searles.

EXECUTIVE COMMITTEE: (Twelve to Nominate)

Frank J. Lanahan, Chairman,

A. Stucki,

G. W. Wildin,

W. S. McAbee,

E. W. Smith,

Louis E. Endsley,

F. I. Snyder,

C. O. Dambach,

R. H. Flinn,

R. P. Forsberg,

E. A. Rauschart,

G. M. Sixsmith.

SUBJECT COMMITTEE: (One to Nominate)

3 Yrs. John B. Wright, Assistant Vice President, Westinghouse Air Brake Company, Wilmerding, Pa.

RECEPTION AND ATTENDANCE COMMITTEE:

(Five to Nominate)

3 Yrs. George B. Farlow, Division Engineer, B. & O. R. Co., Pittsburgh, Pa.

3 Yrs. C. W. Trust, Asst. Traffic Manager, U. S. Steel Corporation Subsidiaries, Pittsburgh, Pa.

3 Yrs. C. M. Wheeler, Asst. District Manager, Union Switch & Signal Co., Swissvale, Pa.

- 3 Yrs. J. Porter Gillespie, Vice President in Charge of R. R. Sales, Lockhart Iron & Steel Co., Pgh., Pa.
- 3 Yrs. W. F. Ambrose, M. M. & M. C. B., Aliquippa & Southern Railroad, Aliquippa, Pa.

#### ENTERTAINMENT COMMITTEE: (Two to Nominate)

- 3 Yrs. C. P. Schrecongost, Traffic Manager, Hillman Coal & Coke Co., Pittsburgh, Pa.
- 3 Yrs. W. B. Moir, Chief Car Inspector, Pennsylvania Railroad, Pittsburgh, Pa.

#### FINANCE COMMITTEE: (Three to Nominate)

- 3 Yrs. R. S. Bull, Supt. Power & Inclines, Pittsburgh Railways Company, Pittsburgh, Pa.
- 3 Yrs. James Nagel, Asst. General Superintendent, Montour Railroad, Coraopolis, Pa.
- 3 Yrs. George W. Fox, Secretary, Davis Brake Beam Company, Johnstown, Pa.

#### ADVERTISING COMMITTEE: (Five to Nominate)

- 3 Yrs. T. R. Dickinson, Purchasing Agent, B. & L. E. R. R. Co., Pittsburgh, Pa.
- 3 Yrs. Harry C. Graham, Vice President, Pittsburgh Screw & Bolt Corporation, Pittsburgh, Pa.
- 3 Yrs. T. R. Fitzpatrick, Freight Traffic Manager, P. & L. E. R. R. Co., Pittsburgh, Pa.
- 3 Yrs. W. F. Wilson, Manager, Pittsburgh Works, American Steel Foundries, Verona, Pa.
- 3 Yrs. Joseph A. Crenner, District Manager, Dearborn Chemical Company, Pittsburgh, Pa.

#### MEMBERSHIP COMMITTEE: (Six to Nominate)

- 3 Yrs. J. L. O'Toole, Asst. to General Manager, P. & L. E. R. R. Co., Pittsburgh, Pa.
- 3 Yrs. J. H. Ainsworth, Railroad Sales Dept., Carnegie-Illinois Steel Corporation, Pittsburgh, Pa.
- 3 Yrs. J. M. Fair, Engineer M. of W., Pennsylvania Railroad, Pittsburgh, Pa.
- 3 Yrs. S. S. Bruce, General Traffic Manager, Koppers Company, Pittsburgh, Pa.
- 3 Yrs. G. W. Honsberger, Transportation Mgr., Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.
- 3 Yrs. C. C. Pitcher, Assistant Superintendent, B. & O. R. R. Co., Pittsburgh, Pa.

NOMINATING COMMITTEE,  
FRANK J. LANAHAN, Chairman,  
R. H. FLINN,  
R. P. FORSBERG,  
E. J. SEARLES,  
T. E. BRITT.

PRESIDENT: Gentlemen, you have heard the report of the Nominating Committee. Are there any other nominations? If not, may we have a motion that the report of the Nominating Committee be accepted as presented. Motion seconded. All in favor say aye. Carried.

I think you will agree with me in the opinion that this Committee did a very fine job and I would like to express to Mr. Lanahan and the other members of his Committee our sincere thanks for the result of their efforts.

Now gentlemen, we come to the big moment insofar as this meeting is concerned, the moment we have been anticipating with considerable pleasure for several months. Our guest speaker is a National figure, a man who is well known throughout the Country, if not by direct contact, by means of radio, so therefore, he does not come to us as an entire stranger. I understand he was originally a newspaperman and has been associated with Mr. Ford for something like twenty years. Gentlemen, it is a pleasure for me now to present to you Mr. W. J. Cameron of the Experimental Laboratories, Ford Motor Company, Dearborn, Mich., who will speak on the subject, "Looking At Our Times". Mr. Cameron.

Mr. Cameron touched upon industrial, economic, political, social and human problems. With rapt attention did the large audience listen to the master craftsman in his portrayal of a sensible relation of government to industry, and his description of events and characters was as entertaining as a Charles Dickens.

To most of our membership, their ears were old acquaintances to Mr. Cameron's voice over the radio, even if their eyes were strangers to his personal appearance.

Prolonged and enthusiastic was the applause at the termination of the speaker's well received statements covering his wide field of activities. A unanimous vote of appreciation and thanks was tendered the speaker and an invitation for a return engagement was extended at any time that Mr. Cameron

would find it convenient to honor us with his outstanding personality and unusual talents.

The stenographic reporter who for years has attended all the Club meetings, was unfortunately prevented by a sudden death in his family, from performing his usual duties of reporting verbatim, the address given. This is a matter of great regret, but cannot be mended. There is, however, the possibility of procuring from Mr. Cameron at least extracts from his talk, in which case they will be furnished at a future date to our members.

PRESIDENT: Thank you very much Mr. Cameron. Is there any discussion any of you gentlemen would like to have with Mr. Cameron? However, before starting any discussion, I would like to remind you that Mr. Cameron has asked me to inform you that he must leave shortly to catch a train in order that he may return to Detroit tonight.

PRESIDENT: Before adjourning, I would like to remind you that our next meeting will be the annual meeting and smoker which will be held in these same facilities on October 27th. At that time, we will have the election and installation of new officers for the coming fiscal year and also the usual festivities. Included will be an excellent entertainment and you have my assurance that it will be clean and wholesome and you should have no hesitancy in bringing to this meeting your sons and friends, and even your preachers, if you care to have them as your guests on that occasion. I hope that announcement has your approval. (Applause).

One of our members, Mr. Shingledecker of the Pennzoil Company, has a little novel idea to advance that I believe and hope will add interest to this meeting this evening. He has brought here six one-gallon cans of motor oil and has asked me to pick at random six of the registration cards and the gentlemen whose cards I happen to select will each receive from him a can of this oil as a gift of his Company. Now I hope I do not pick out more than six cards, as there are only six cans of oil here, and then I hope I can read the names on the cards when I get them. The first card selected bears the name of F. I. Snyder, then comes Charles McKee, J. A. Warfel, W. J. Heinz, F. A. Rumbarger and Thomas F. Lindberg. If these gentlemen are in the room and will come forward to the platform, a can of this motor oil is waiting for them.



Now, gentlemen, this concludes the program for the evening. We again want to express our appreciation for the large attendance in honor of and to hear Mr. Cameron, and with the further announcement that lunch will be served at the end of the room as usual, the meeting is adjourned, and I hope to see you all in October.

J. D. CONWAY, Secretary.

# **In Memoriam**

**JOHN D. McCLINTOCK**

**Joined Club April 22, 1910**

**Died June 4, 1938**

**FRANK E. TAPLIN**

**Joined Club November 23, 1933**

**Died June 7, 1938**









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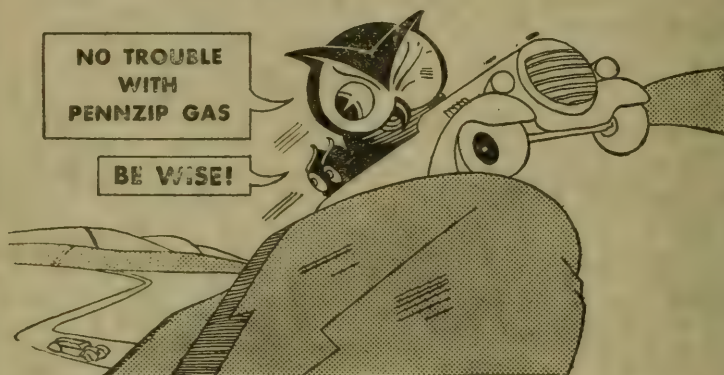
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OCTOBER 27, 1938.

No. 9.

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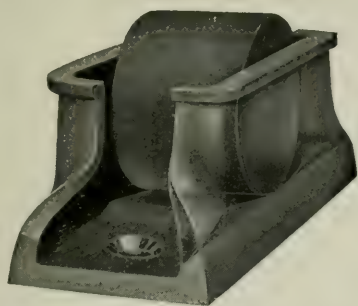
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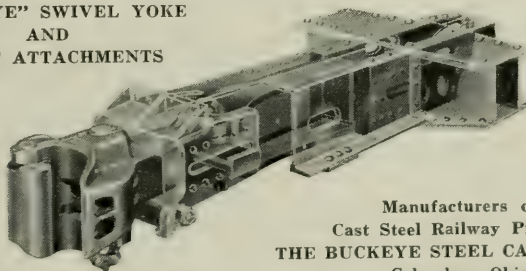


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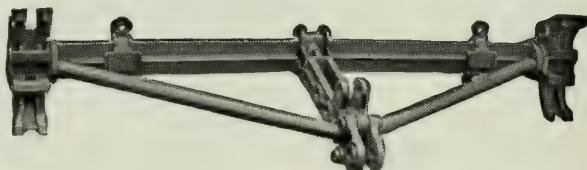
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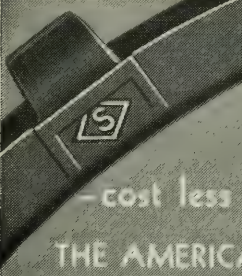


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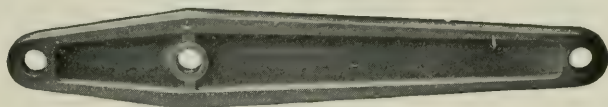
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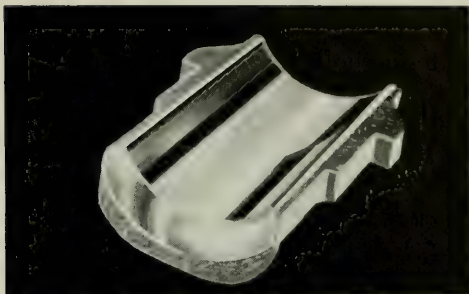
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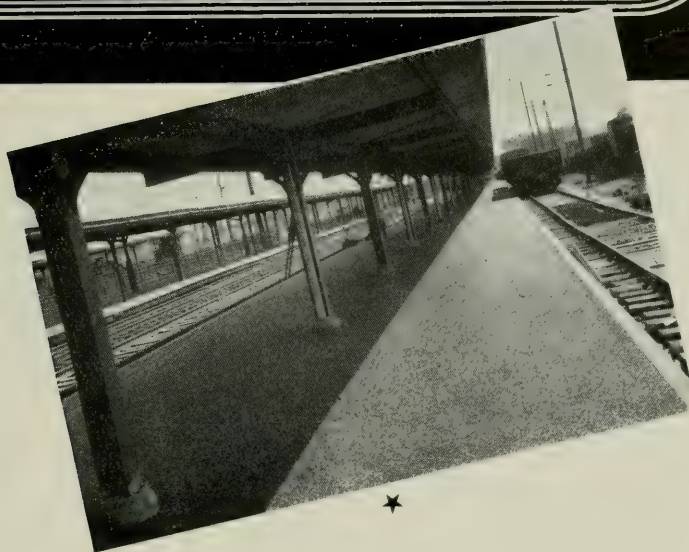
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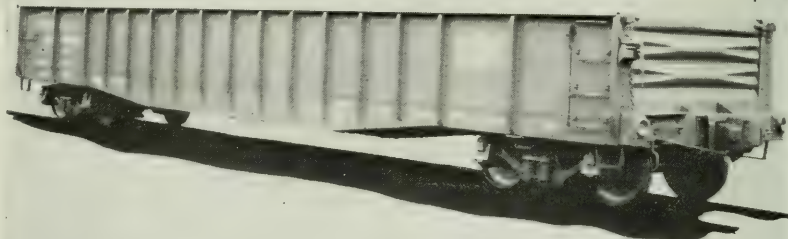
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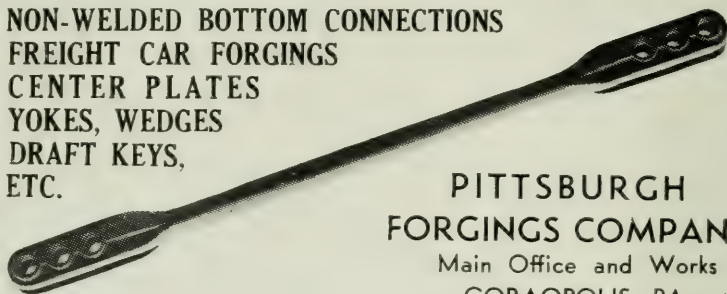
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OF  
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Organized October 18, 1901

Vol. XXXVII.  
No. 9

**Pittsburgh, Pa., Oct. 27, 1938.**

\$1.00 Per Year  
25c Per Copy

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G. W. WILDIN, Consulting Engineer, Westinghouse Air Brake Company, Pittsburgh, Pa.  
W. S. McABEE, Vice Pres. & General Supt., Union Railroad Co., East Pittsburgh, Pa.  
E. W. SMITH, Vice President, The Pennsylvania Railroad, Pittsburgh, Pa.  
LOUIS E. ENDSLEY, Consulting Engineer, 516 East End Avenue, Pittsburgh, Pa.  
F. I. SNYDER, Vice President & General Manager, B. & L. E. R. R. Co., Pittsburgh, Pa.  
C. O. DAMBACH, Superintendent, P. & W. Va. Ry. Co., Pittsburgh, Pa.  
R. H. FLINN, General Superintendent, The Pennsylvania Railroad, Pittsburgh, Pa.  
R. P. FORSBERG, Chief Engineer, P. & L. E. R. R. Co., Pittsburgh, Pa.  
E. A. RAUSCHART, 948 Greenfield Ave., Pittsburgh, Pa.

SUBJECT COMMITTEE:

H. H. HAUPT, Chairman, Gen. Supt. Motive Power, Pennsylvania Railroad, Pittsburgh, Pa.  
G. H. BURNETTE, Assistant Chief Engineer, P. & L. E. R. R. Co., Pittsburgh, Pa.  
D. W. McGEORGE, Secretary, Edgewater Steel Company, Pittsburgh, Pa.

RECEPTION AND ATTENDANCE COMMITTEE:

J. W. JOHNSON, Chairman, Superintendent, Railway Express Agency, Pittsburgh, Pa.  
C. E. ADAMS, Division Superintendent, The Pennsylvania Railroad, Pittsburgh, Pa.  
T. E. BRITT, Division Storekeeper, B. & O. R. R. Co., Pittsburgh, Pa.  
W. P. BUFFINGTON, Traffic Manager, Pittsburgh Coal Company, Pittsburgh, Pa.  
WILLIAM C. HANSEN, Assistant Manager, A. Stucki Company, Pittsburgh, Pa.  
C. H. REYMER, Sales Representative, Oliver Iron & Steel Corporation, Pittsburgh, Pa.  
T. F. SHERIDAN, Asst. to Supts. Motive Power & Rolling Stock, P. & L. E. R. R. Co.,  
McKees Rocks, Pa.  
J. W. BOYD, Superintendent, Monongahela Railway Company, Brownsville, Pa.  
THOMAS E. CANNON, 640 Marshall Ave., St. Paul, Minn.  
T. W. CARE, Supt. Rolling Stock, P. & L. E. R. R. Co., McKees Rocks, Pa.  
D. C. CARROLL, Assistant Agent, The Pennsylvania Railroad, Pittsburgh, Pa.  
S. G. DOWN, Vice President, Westinghouse Air Brake Company, Wilmerding, Pa.  
HARRY C. GRAHAM, Pittsburgh Screw & Bolt Corporation, Pittsburgh, Pa.  
J. W. SCHAD, Division Master Mechanic, B. & O. R. R. Co., Pittsburgh, Pa.  
A. A. READ, Duquesne Slag Products Company, Pittsburgh, Pa.  
C. P. SCHRECONGOST, Traffic Manager, Hillman Coal & Coke Company, Pittsburgh, Pa.

## ENTERTAINMENT COMMITTEE:

J. PORTER GILLESPIE, Chairman, Asst. Gen. Supt., Lockhart Iron & Steel Co., Pgh., Pa.  
 VINCENT KROEN, Vice Chairman, Supervr., Express Service, Penna. R. R., Pgh., Pa.  
 W. C. BUREL, Master Mechanic, Western Allegheny Railroad, Kaylor, Pa.  
 H. E. CHILCOAT, Gen. Mgr. of Sales, Koppel Div., Pressed Steel Car Co., Inc., Pgh., Pa.  
 F. L. FOSTER, Supt. Freight Transportation, P. & L. E. R. R. Co., Pittsburgh, Pa.  
 J. S. LANAHAN, Vice President, Fort Pitt Malleable Iron Company, Pittsburgh, Pa.  
 JAMES NAGEL, Asst. General Superintendent, Montour Railroad Company, Coraopolis, Pa.

## FINANCE COMMITTEE:

M. A. SMITH, Chairman, General Manager, P. & L. E. R. R. Co., Pittsburgh, Pa.  
 J. B. DIVEN, Superintendent Motive Power, The Pennsylvania Railroad, Pittsburgh, Pa.  
 F. J. RYAN, District Representative, Detroit, Toledo & Ironton Railroad, Pittsburgh, Pa.  
 C. E. CATT, Division Accountant, B. & O. R. R. Co., Pittsburgh, Pa.  
 G. W. HONSBERGER, Transpn. Mgr., Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

## ADVERTISING COMMITTEE:

J. H. JAMES, Chairman, Purchasing Agent, P. & L. E. R. R. Co., Pittsburgh, Pa.  
 J. C. SHINGLEDECKER, Supervisor of Service Stations, The Pennzoil Co., Pittsburgh, Pa.  
 CHARLES M. WHEELER, Sales Engineer, Union Switch & Signal Co., Swissvale, Pa.

## MEMBERSHIP COMMITTEE.

W. B. MOIR, Chairman, Chief Car Inspector, The Pennsylvania Railroad, Pittsburgh, Pa.  
 LLOYD SUTHERLAND, Vice Chair., Gen. Storekeeper, P. & L. E. R. R., McKees Rocks, Pa.  
 T. FITZGERALD, Vice Pres. & Gen. Mgr., Pittsburgh Railways Co., Pittsburgh, Pa.  
 G. C. HARPER, General Superintendent, Montour Railroad Company, Coraopolis, Pa.  
 FRANK A. JARRES, Assistant Storekeeper, B. & O. R. R. Co., Pittsburgh, Pa.  
 C. S. LEET, Assistant General Manager, B. & L. E. R. R. Co., Pittsburgh, Pa.  
 C. R. MEGEE, Dist. Mgr. Car Service Div., Association of American Railroads, Pgh., Pa.  
 R. C. McINTYRE, Supt. Motive Power, Union Railroad Company, East Pittsburgh, Pa.  
 H. C. PRINGLE, Vice Pres. & Supt., Monongahela Connecting R. R. Co., Pittsburgh, Pa.  
 S. B. RILEY, General Superintendent, P. & W. Va. Ry. Co., Pittsburgh, Pa.  
 JOHN B. WRIGHT, Asst. Vice President, Westinghouse Air Brake Co., Wilmerding, Pa.  
 F. H. EATON, Sales Engineer, American Car & Foundry Company, Pittsburgh, Pa.  
 C. W. GOTTSCHALK, Asst. Traffic Manager, Jones & Laughlin Steel Corp., Pgh., Pa.  
 THOMAS R. FITZPATRICK, Freight Traffic Mgr., P. & L. E. R. R. Co., Pittsburgh, Pa.  
 P. W. HEPBURN, Sales Engineer, Gulf Oil Corporation, Pittsburgh, Pa.  
 C. W. TRUST, Asst. Traffic Mgr., U. S. Steel Corporation Subsidiaries, Pittsburgh, Pa.

## PAST PRESIDENTS:

|                        |                    |               |
|------------------------|--------------------|---------------|
| *J. H. McCONNELL.....  | October, 1901, to  | October, 1903 |
| *L. H. TURNER.....     | November, 1903, to | October, 1905 |
| *F. H. STARK.....      | November, 1905, to | October, 1907 |
| *H. W. WATTS.....      | November, 1907, to | April, 1908   |
| *D. J. REDDING.....    | November, 1908, to | October, 1910 |
| *F. R. McFEATHERS..... | November, 1910, to | October, 1912 |
| *A. G. MITCHELL.....   | November, 1912, to | October, 1914 |
| *F. M. McNULTY.....    | November, 1914, to | October, 1916 |
| *J. G. CODE.....       | November, 1916, to | October, 1917 |
| *D. M. HOWE.....       | November, 1917, to | October, 1918 |
| *J. A. SPIELMAN.....   | November, 1918, to | October, 1919 |
| H. H. MAXFIELD.....    | November, 1919, to | October, 1920 |
| FRANK J. LANAHAN.....  | November, 1920, to | October, 1921 |
| *SAMUEL LYNN.....      | November, 1921, to | October, 1922 |
| *D. F. CRAWFORD.....   | November, 1922, to | October, 1923 |
| *GEO. D. OGDEN.....    | November, 1923, to | October, 1924 |
| A. STUCKI.....         | November, 1924, to | October, 1925 |
| *F. G. MINNICK.....    | November, 1925, to | October, 1926 |
| G. W. WILDIN.....      | November, 1926, to | October, 1927 |
| E. J. DEVANS.....      | November, 1927, to | October, 1928 |
| W. S. McABEE.....      | November, 1928, to | October, 1929 |
| E. W. SMITH.....       | November, 1929, to | October, 1930 |
| LOUIS E. ENDSLEY.....  | November, 1930, to | October, 1931 |
| *JOHN E. HUGHES.....   | November, 1931, to | October, 1932 |
| F. I. SNYDER.....      | November, 1932, to | October, 1933 |
| C. O. DAMBACH.....     | November, 1933, to | October, 1934 |
| R. H. FLINN.....       | November, 1934, to | October, 1935 |
| R. P. FORSBERG.....    | November, 1935, to | October, 1936 |
| E. A. RAUSCHART.....   | November, 1936, to | October, 1937 |

\*—Deceased.

Meetings held fourth Thursday of each month except June, July and August.

## PROCEEDINGS OF MEETING

OCTOBER 27, 1938

The Annual Meeting was called to order at the Fort Pitt Hotel at 8:00 o'clock P. M., with President G. M. Sixsmith in the Chair.

Registered attendance 567, as follows:

### MEMBERS

|                   |                    |
|-------------------|--------------------|
| Adams, C. E.      | Bucher, Fred J.    |
| Adams, Frank W.   | Buckley, William   |
| Adams, W. A.      | Bull, R. S.        |
| Ambrose, W. F.    | Burel, W. C.       |
| Ames, L.          | Burnette, G. H.    |
| Anderson, Burt T. | Burriss, W. C.     |
| Anderson, J. P.   | Callahan, D. E.    |
| Angel, A. J.      | Callahan, F. J.    |
| Anne, George E.   | Campbell, F. R.    |
| Arnold, J. J.     | Carmody, J. J.     |
| Ashley, F. B.     | Carson, John       |
| Aulbach, A. J.    | Carter, E. D.      |
| Bagaley, W. W.    | Carr, T. W.        |
| Balla, J. A.      | Chilcoat, H. E.    |
| Balsley, James I. | Christy, F. X.     |
| Balzer, C. F.     | Cipro, Thomas      |
| Barr, H. C.       | Clements, F. C.    |
| Bauer, F. C.      | Clowes, W. K.      |
| Baumann, E. G.    | Code, C. J.        |
| Beam, O. F.       | Conway, J. D.      |
| Beeson, H. L.     | Coombe, A. B.      |
| Bell, C. W.       | Cotter, G. L.      |
| Beltz, J. D.      | Coulter, A. F.     |
| Bender, H. P.     | Courtney, H.       |
| Berg, Kari        | Crawford, Burt H.  |
| Berg, Max         | Crenner, Joseph A. |
| Berghane, A. L.   | Cudworth, H. D.    |
| Binau, R. J.      | Cunningham, R. I.  |
| Bishop, Don       | Dambach, C. O.     |
| Bishop, M. L.     | Daugherty, W. A.   |
| Bisler, W. E.     | Davis, Charles S.  |
| Black, C. R.      | Davis, John W.     |
| Boyd, John R.     | Dean, E. E.        |
| Britt, T. E.      | Dean, Robert W.    |
| Brown, A. W.      | Dean, W. A.        |
| Brown, C. C.      | Dehne, G. C.       |
| Bryant, Jess      | Dempsey, A.        |
| Bryant, L. J.     | Dickinson, B. F.   |
| Buchanan, C. C.   | Dickinson, R. T.   |

|                       |                     |
|-----------------------|---------------------|
| Dickinson, T. R.      | Hansen, W. C.       |
| Dickson, K. B.        | Harper, G. C.       |
| Dunbar, H. F.         | Harper, J. T.       |
| Dunham, C. W.         | Haupt, H. H.        |
| Dunkerly, E. R.       | Hautman, Hugo       |
| Durell, W. A.         | Heed, H. L.         |
| Durnell, W. E.        | Heer, Walter        |
| Eberhart, James A.    | Heinz, W. J.        |
| Edsall, S. D.         | Hengst, Guy E.      |
| Emery, E.             | Henry, C. J.        |
| Evans, David F.       | Hess, Charles A.    |
| Fair, J. M.           | Hicks, E. S., Jr.   |
| Falkner, A. J.        | Hilgert, T. J.      |
| Farlow, G. B.         | Hill, Jack          |
| Faustman, Paul L.     | Hilstrom, A. V.     |
| Ferguson, George      | Holbrook, E. L.     |
| Fieldson, P. H.       | Holmes, Edward H.   |
| Fischer, G. E.        | Honsberger, G. W.   |
| Flinn, R. H.          | Hoopes, R. E.       |
| Flynn, F. E.          | Hopper, George      |
| Forsberg, R. P.       | Hunt, L.            |
| Forsythe, George B.   | Hykes, W. H.        |
| Foster, F. L.         | Ingraham, C. G.     |
| Fox, George W.        | Irwin, R. D.        |
| Frauenheim, Pierce H. | Jados, Walter T.    |
| Friend, E. F.         | Jakovac, Victor     |
| Fry, L. H.            | Jarden, Carroll     |
| Furch, George J.      | Johnson, Ira S.     |
| Galbraith, James R.   | Johnson, J. W.      |
| Gardner, George R.    | Kamerer, R. W.      |
| Geiser, W. P.         | Kearfott, W. E.     |
| George, W. J.         | Kellenberger, K. E. |
| Gilg, Henry F.        | Kelly, J. P.        |
| Gillespie, J. Porter  | Kelly, L. J.        |
| Glaser, C. J.         | Kentlein, John      |
| Glaser, J. P.         | Keys, A. H.         |
| Gleeson, H. L.        | Klassen, F. G.      |
| Glenn, J. H.          | Klein, S. J.        |
| Golden, A. B.         | Klingensmith, W. S. |
| Goldstrom, G. E.      | Knoff, D. R.        |
| Goodwin, A. E.        | Koch, Edward J.     |
| Gordon, Clarence M.   | Kohl, C. J.         |
| Goss, John L.         | Kroske, J. F.       |
| Griest, E. E.         | Lanahan, Frank J.   |
| Grove, C. G.          | Lanahan, J. S.      |
| Groves, W. C.         | Larson, W. E.       |
| Guinnip, M. S.        | Leban, J. L.        |
| Haller, Nelson M.     | Leet, C. S.         |
| Hamilton, W. H.       | Leonard, C. W.      |
| Hance, R. H.          | Leonard, P. J.      |
| Hancock, M. L.        | Lewis, Benjamin     |



|                    |                      |
|--------------------|----------------------|
| Lewis, Norman F.   | Overholt, B. C.      |
| Lincoln, B. B.     | Paisley, F. R.       |
| Long, R. M.        | Palmer, E. A.        |
| Lutz, H.           | Passmore, H. E.      |
| Maliphant, C. W.   | Peirce, W. B.        |
| Malone, F. B.      | Perreas, S. J.       |
| Matchett, H. K.    | Pickard, S. B.       |
| Masters, W. C.     | Pitcher, C. C.       |
| Maxwell, Thomas    | Posteraro, S. F.     |
| Mayer, L. I.       | Pringle, P. V.       |
| Megee, C. R.       | Provost, S. W.       |
| Metzger, C. L.     | Purchard, Paul       |
| Millar, C. W.      | Reagan, Henry V.     |
| Miller, R. C.      | Reiser, Frank        |
| Miller, James B.   | Renshaw, W. B.       |
| Miller, John       | Riley, O. W.         |
| Miller, W. J.      | Riley, S. B.         |
| Mitchell, W. S.    | Rizzo, C. M.         |
| Moir, W. B.        | Roberts, E. L.       |
| Molyneaux, D. S.   | Robertson, A. S.     |
| Monk, J. T.        | Robinson, Lester L.  |
| Moore, D. O.       | Rudd, W. B.          |
| Morgan, Homer C.   | Rupp, E. S.          |
| Morris, J. D.      | Rushneck, George L.  |
| Morrison, R. A. J. | Rutter, H. E.        |
| Moss, R. C.        | Ryan, D. W.          |
| Mowery, J. F.      | Saville, E. W.       |
| Muir, R. Y.        | Sarchet, Roger       |
| Mulvey, J. I.      | Schaefer, E. F.      |
| Murphy, D. L.      | Schadt, A. D.        |
| Murray, C. C.      | Schaffer, W. E.      |
| Musgrove, W. W.    | Schako, E. J.        |
| McCarty, J. G.     | Schane, Frank A.     |
| McCormick, E. S.   | Schauers, R. W.      |
| McCrossin, C. D.   | Schiller, John       |
| McCully, D. L.     | Schrecongost, C. P.  |
| McIntyre, R. C.    | Scudder, D. F.       |
| McKim, Hollis      | Schweitzer, A. C.    |
| McKinley, John T.  | Searles, E. J.       |
| McLaughlin, H. B.  | Seibert, W. L.       |
| McMillan, A. P.    | Seivard, A. M.       |
| McNamee, William   | Sekera, C. J.        |
| McQuiston, C. A.   | Semmer, M. R.        |
| McTighe, B. J.     | Servais, F. W.       |
| Nagel, James       | Severn, A. B.        |
| Nathan, W. S.      | Sheffer, R. W.       |
| Nieman, Charles J. | Shellenbarger, H. M. |
| Nieman, Harry L.   | Sheridan, T. F.      |
| Noonan, Daniel     | Showalter, Joseph    |
| O'Leary, J. J.     | Sixsmith, G. M.      |
| O'Sullivan, J. J.  | Slater, A. J.        |

Smith, Charles F.  
 Snyder, F. I.  
 Staats, Kenneth A.  
 Stack, John E.  
 Stamm, Bruce B.  
 Stamm, J. Duncan  
 Steigerwalt, R. W.  
 Steiner, P. E.  
 Stemen, C. M.  
 Stevens, L. V.  
 Stewart, J. C.  
 Stillwagon, C. K.  
 Stocker, H. F.  
 Stoecker, J. P.  
 Stoffregen, Louis E.  
 Stucki, A.  
 Stype, William G.  
 Sullivan, A. W.  
 Sutherland, Lloyd  
 Suttle, Albert H.  
 Sutton, R. C.  
 Swank, W. E.  
 Taylor, H. D.  
 Taylor, J. T.  
 Terry, Edward  
 Teskey, Dr. Walter J.  
 Thomas, George P.

Zoog, H. J.

Tipton, G. M.  
 Tomasic, N. M., Jr.  
 Tracey, J. B. A.  
 Trautman, H. J.  
 Truschel, J. H.  
 Tyler, B. W.  
 Uhar, John J.  
 Unger, Dr. J. S.  
 Urtel, E. J.  
 Utzler, Elmer S.  
 Vanderbosch, C. J.  
 Van Horne, C. F.  
 Van Woert, F. E.  
 Walter, E. R.  
 Weis, Frank E.  
 Welch, E. M.  
 West, Troy  
 Westerman, M. A.  
 Wikander, O. R.  
 Williams, D. L.  
 Wilson, James R.  
 Wilson, W. F.  
 Wilson, W. H.  
 Woodings, Robert T.  
 Woodward, R.  
 Yarhouse, W. T.  
 Zell, H. A.

## VISITORS

Aaron, Paul S.  
 Ackley, J. O.  
 Aiton, J. C.  
 Alberts, J. F.  
 Anderson, C. A.  
 Angerman, J. C.  
 Armstrong, E. W.  
 Bagaley, Richard T.  
 Bagaley, Robert F.  
 Baker, George N.  
 Barber, G. P.  
 Barton, R. E.  
 Bates, C. C.  
 Bell, R. R.  
 Bennett, J. B.  
 Berger, C. A.  
 Bergman, Oscar  
 Berkoben, C.  
 Black, A. L.

Bortz, J. M.  
 Brandau, W. O.  
 Brandt, John  
 Brown, R. J.  
 Bruce, B. D.  
 Buckley, G. E.  
 Burgess, T. S.  
 Burgess, W. C.  
 Burns, S. P.  
 Burt, R. W.  
 Carroll, A. E., Jr.  
 Carroll, F. E.  
 Clinton, J. W.  
 Coen, J. L.  
 Cohen, A. J.  
 Colclaser, L. A.  
 Collins, C. E.  
 Collins, J. J.  
 Connell, J. R.

|                     |                        |
|---------------------|------------------------|
| Connell, Roy        | Hewlett, H. D.         |
| O'Conner, M. J.     | Hibbs, A. R.           |
| Conover, H. T.      | Hibbs, Charles R.      |
| Cooper, J. P.       | Hicks, William T.      |
| Corcoran, J. J.     | Higgs, David           |
| Cravener, James     | Hill, H. A.            |
| Crawford, Claude    | Holland, A.            |
| Cunningham, J. B.   | Holmes, George P.      |
| Dahlem, Joe         | Hostler, N. R.         |
| Daley, C. A.        | Jacobe, W. C.          |
| Dambach, J. C.      | Jacoby, H. R.          |
| Dawson, P. R.       | Jakovac, J.            |
| Davis, William B.   | James, S. L.           |
| Dean, G. M.         | Johnson, Henry S., Jr. |
| Dankmyer, F. C.     | Jones, H. S.           |
| Durant, C. H.       | Jones, John            |
| Durkin, H. E.       | Jones, M. L.           |
| Eichhorn, T. F.     | Kaney, E. M.           |
| Emsheimer, Louis    | Kautenwein, O. E.      |
| Eperthener, A. F.   | Keefer, S. W.          |
| Ervine, William     | Kerr, C. R.            |
| Ferguson, J.        | Kirby, John T., Jr.    |
| Fisher, John J.     | Kohute, K. G.          |
| Fitzhugh, William   | Kramer, J. Kenneth     |
| Fletcher, Albert    | Kumer, John            |
| Foley, Harry J.     | Latorre, M.            |
| Ford, J.            | Laughlin, R. B.        |
| Fraser, S. R.       | Lauth, Harry J.        |
| Freyer, H. C.       | Leahy, John J.         |
| Friend, R. A.       | Lehr, William E.       |
| Gardner, G. A.      | Lewis, S. B.           |
| Glass, Russell W.   | Lindberg, Thomas F.    |
| Gluckson, Edward    | Lindner, John          |
| Goldensen, A. B.    | Little, James          |
| Gollmar, Charles W. | Lloyd, J. M.           |
| Gower, Robert       | Lord, R. D.            |
| Greenawald, M. G.   | Long, H. P.            |
| Gress, L. K.        | Lumpp, Ray             |
| Greydo, Stanley     | Machosky, A. F.        |
| Griffin, Gerald P.  | Maloney, C. C.         |
| Grimm, W. R.        | Marshall, L. L.        |
| Guidotti, Harry     | Martin, John           |
| Hahn, H. A.         | Mashl, S.              |
| Hanna, W. F.        | Meixner, M. G.         |
| Harbourt, C. W.     | Meyers, A. C.          |
| Hastings, W. S.     | Miller, Bernard        |
| Helly, C. R.        | Miller, J. H.          |
| Hemma, Charles H.   | Miller, Paul           |
| Hemmel, O. O.       | Mirage, M. J.          |
| Henderson, R. R.    | Mitchell, Joseph J.    |
| Henkel, William     | Moehler, Frank         |

Molyneaux, L. S.  
 Monroe, Paul B.  
 Morrison, Glenn W.  
 McCann, Daniel J.  
 McConn, G. E.  
 McGann, T. L.  
 McGall, William J.  
 McHattie, William  
 McKinstry, C. M.  
 McNutt, J. H.  
 McPherson, K. W.  
 McVicker, J. W.  
 Newell, G.  
 Nieman, H. L., Jr.  
 Noble, R. F.  
 O'Connor, J. R.  
 O'Hagan, J. E.  
 Overholt, B. Edward  
 Palmquist, Emil L.  
 Parsons, E. H.  
 Peirce, John  
 Penn, C. D.  
 Penn, William  
 Peoples, James  
 Petty, Edward C.  
 Phillips, William H.  
 Poellot, J. L.  
 Pool, I. J.  
 Ranck, J. F.  
 Rauschart, R.  
 Reed, J. E.  
 Reher, Roland  
 Reifsnyder, J. W.  
 Reynolds, D. E.  
 Rider, H. C.  
 Rigatti, Gus  
 Roach, L. L.  
 Robinson, H. J.  
 Rodgers, Joseph W.  
 Roney, H. E.  
 Ruch, P. R.  
 Rudolph, Harold  
 Ruff, Norman E.  
 Russell, R. J.

Ryan, J. M.  
 Schmucker, K.  
 Schoen, L.  
 Scott, James  
 Searight, J. C.  
 Shauck, C. E.  
 Shoemaker, R.  
 Sixsmith, J. M.  
 Sixsmith, William L.  
 Smith, Frank D.  
 Snead, Robert  
 Snyder, George H.  
 Snyder, H. C.  
 Snyder, Samuel, Jr.  
 Stauffer, O. G.  
 Stevens, Kenneth C.  
 Stradling, A. C.  
 Thomas, G. P., Jr.  
 Thomas, Martin  
 Tracey, B. A.  
 Troop, R. L.  
 Truddel, W. S.  
 Tudball, J. H.  
 Urban, C. E.  
 Vamianker, George  
 Vanderbosch, R. C.  
 Vandivort, R. E.  
 Vogel, E. E.  
 Walther, G. W.  
 Walton, H. R.  
 Waple, Charles  
 Ward, N. H.  
 Ward, W. E.  
 Warrensford, F. S.  
 Waterman, E. L.  
 Wetzal, L. W.  
 Wiegand, F. B.  
 Wieahelt, W. L.  
 Will, Adrian  
 Williamson, J. A.  
 Willoughby, F. R.  
 Wilson, A.  
 Yets, J. J.  
 Youngk, W. E.

Zimmerman, Fred

PRESIDENT: This is not going to be a difficult meeting to preside over because with all these funny looking hats in front of me you all look more or less alike, and it is not easy to distinguish one person from another. Even the boss



cannot be located at this moment in one of those hats, and I do not know just what he looks like in it. Now, gentlemen, before launching into the program for this evening, I feel I should make some reference to our September meeting; that is, the meeting held last month. You will recall on that occasion we had as our guest speaker, Mr. W. J. Cameron of the Ford Motor Company of Detroit, and those of you who had the good fortune to hear him will recall that stirring address that Mr. Cameron delivered. However. I am sorry to have to advise you that it is impossible for us to reproduce that message in our pamphlet reporting the proceedings of that meeting. We regret it very much. I know many of you who heard Mr. Cameron, including myself, were looking forward in pleasant anticipation to reading what he said on that occasion and, of course, those of you who did not hear him will undoubtedly regret more than the others. our inability to produce in writing Mr. Cameron's speech.

Now, for once, I would just like to omit that stereotype reference to the roll call and the minutes of proceedings of previous meeting. You will all know what I mean. The important thing is that you have registered by card at the door and the minutes of the meeting in booklet form, without Mr. Cameron's address, is now in the mail.

This, gentlemen, is our annual meeting, and we must, of course, give consideration to the annual reports and the comments of the Committee Chairmen. We will consider first the Treasurer's report, to be followed by the Secretary's report, and act on those two reports jointly. I believe the Secretary will present both of them. We will now hear the Treasurer's report and the Secretary's report, presented by Secretary Conway.

MR. CONWAY: I do not think my voice will carry or be heard clearly, but I will do the best I can. This is the Treasurer's report of our Club:

### **TREASURER'S REPORT**

Pittsburgh, Pa., October 27, 1938.

To the Officers and Members of

The Railway Club of Pittsburgh.

Gentlemen:

I herewith submit my report for the year ended October 27, 1938:

## ON HAND AND RECEIPTS

|                                                                                       |            |
|---------------------------------------------------------------------------------------|------------|
| Cash on hand October 28, 1937.....                                                    | \$1,966.96 |
| Moneys received from J. D. Conway, Sec.,<br>from Oct. 29, 1937, to Oct. 27, 1938..... | 5,335.77   |
| Interest on Bonds.....                                                                | 57.50      |

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|                     |            |
|---------------------|------------|
| Total Receipts..... | \$7,360.23 |
|---------------------|------------|

## DISBURSEMENTS

|                                           |          |
|-------------------------------------------|----------|
| Paid on vouchers No. 923 to 955 inclusive | 5,480.48 |
|-------------------------------------------|----------|

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|                   |            |
|-------------------|------------|
| Cash on hand..... | \$1,879.75 |
|-------------------|------------|

## RESOURCES

|                                                                                          |            |
|------------------------------------------------------------------------------------------|------------|
| Two U. S. Treasury Bonds, \$1,000.00 each,<br>bearing interest at $2\frac{7}{8}\%$ ..... | \$2,000.00 |
| Cash balance.....                                                                        | 1,879.75   |

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|                       |            |
|-----------------------|------------|
| Total Resources ..... | \$3,879.75 |
|-----------------------|------------|

E. J. SEARLES, Treasurer.

Approved:

EXECUTIVE COMMITTEE,  
FRANK J. LANAHAN, Chairman.

## SECRETARY'S REPORT

Pittsburgh, Pa., October 27, 1938.

To the Officers and Members of  
The Railway Club of Pittsburgh.

Gentlemen:

The following is a summary of membership and financial  
statement for the fiscal year ended October 27, 1938:

|                                           |       |
|-------------------------------------------|-------|
| Membership reported last year.....        | 1,371 |
| Reinstated .....                          | 3     |
| Received into membership during year..... | 111   |
|                                           | <hr/> |
|                                           | 1,485 |
| Suspended .....                           | 182   |
| Resigned .....                            | 75    |
| Loss of Address.....                      | 7     |
| Deaths reported during year.....          | 11    |
|                                           | <hr/> |
|                                           | 275   |
|                                           | <hr/> |
| Present membership .....                  | 1,210 |

Of the above membership three are honorary. They are:  
D. C. Buell, Samuel O. Dunn and John A. Penton.

PRESIDENT: We are about to reach the sad part of Mr. Conway's report, especially at a meeting of this kind when we are assembled primarily for a night of enjoyment and entertainment. You are about to hear read the names of our members who have passed on during the past year. They were all friends of ours and I think it would be most fitting for us to show them a little respect at this moment, so while Mr. Conway is reading the names of our deceased members I will ask you to join with me in standing in silent meditation while those names are being read.

(Assemblage arises.)

(The names were read by Mr. Conway.)

MR. CONWAY: I will now continue with the Secretary's report.

#### DECEASED MEMBERS

| Name                      | Died              |
|---------------------------|-------------------|
| J. G. Anderson.....       | October 30, 1935  |
| J. L. Armstrong.....      | November 30, 1937 |
| E. C. Clark.....          | July 4, 1938      |
| J. Donald Cunningham..... | October 7, 1938   |
| J. G. Kulp.....           | September 3, 1938 |
| C. C. Loder.....          | October 19, 1938  |
| Curtis B. Mellon.....     | February 20, 1938 |
| John D. McClintock.....   | June 4, 1938      |
| T. E. Nestor.....         | January 31, 1938  |
| William Shuster .....     | April 19, 1938    |
| Frank E. Taplin.....      | June 7, 1938      |

#### RECEIPTS

|                                                |            |
|------------------------------------------------|------------|
| In hands of Treasurer, close of last year..... | \$3,966.96 |
| From advertisements.....                       | 1,369.62   |
| From dues.....                                 | 3,309.00   |
| From sale of "Proceedings".....                | 6.75       |
| Smoker tickets and dinner, Oct. 28, 1937..     | 649.50     |
| Miscellaneous sources .....                    | .90        |
| Interest on Bonds.....                         | 57.50      |

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\$9,360.23

## DISBURSEMENTS

|                                                               |            |
|---------------------------------------------------------------|------------|
| Printing Proceedings, notices, mailing, etc.                  | \$2,366.19 |
| Luncheons, cigars, postage, etc.....                          | 1,069.68   |
| Reporting meetings .....                                      | 160.00     |
| Dinner, entertainment, smoker, etc.,<br>October 28, 1937..... | 639.15     |
| Salary and advertising expense.....                           | 1,136.96   |
| Moving pictures .....                                         | 37.00      |
| Messenger service, affidavits, etc.....                       | 18.50      |
| Premium on bonds—Treas. and Sec.....                          | 14.00      |
| Special entertainment at various meetings                     | 39.00      |
|                                                               | <hr/>      |
|                                                               | 5,480.48   |
|                                                               | <hr/>      |
| Net Balance at close of year...                               | \$3,879.75 |

NOTE:—Balance is made up of \$1,879.75 cash and two U. S. Treasury Bonds, \$1,000.00 each—2 $\frac{7}{8}$ % interest.  
J. D. CONWAY, Secretary.

Approved:

EXECUTIVE COMMITTEE,  
FRANK J. LANAHAN, Chairman.

We have audited the accounts of the Secretary and Treasurer, and find them correct as reported.

FINANCE COMMITTEE,  
M. A. SMITH, Chairman  
J. B. DIVEN,  
G. W. HONSBERGER.

PRESIDENT: Gentlemen, you have heard the Treasurer's report and also the Secretary's report. Is there any question or discussion that you would like to have with respect to these reports? If not, what is your pleasure? May I have a motion that they be approved and accepted as read?

MR. C. O. DAMBACH: I move they be accepted as read.  
(Motion was seconded.)

PRESIDENT: It has been regularly moved and seconded that these reports be accepted and filed as read.  
(Motion voted on and carried.)

PRESIDENT: The motion is carried.  
When I was talking a few moments ago about our last



meeting and particularly about Mr. Cameron's talk on that occasion, I forgot to tell you that Mr. Cameron has been quoted since returning to Detroit as saying that he enjoyed very much his visit with us, and that he had never talked to a more interesting audience. I thought you would like to know that and I think you will agree with me it speaks very well for the personnel of our organization.

Mr. Conway, have you any proposals for new members?

MR. CONWAY: Mr. President and gentlemen: We have the following proposals for new members at this time:

- Beam, William H., Steam and Electrical Engineer, P. & W. Va. Ry. Co., 64 Oakwood Road, Crafton, Pittsburgh, Pa. Recommended by S. B. Riley.
- Bell, Charles W., Supervisor of General Engineering, Union Switch & Signal Company, 311 Burlington Road, Forest Hills, Pittsburgh (21), Pa. Recommended by C. M. Wheeler.
- Bisler, Walter E., Sales Representative, Combustion Engineering Company, Inc., First National Bank Building, Pittsburgh, Pa. Recommended by L. A. Stiles.
- Brown, Ralph W., Service Engineer, Flannery Bolt Company, Bridgeville, Pa. Recommended by E. S. Fitz Simmons.
- Greenslade, G. R., Physicist, Flannery Bolt Company, Box 86-A, Route 8, Crafton, Pittsburgh, Pa. Recommended by E. S. Fitz Simmons.
- Ingraham, C. G., Purchasing Agent, Pressed Steel Car Company, 7070 Flaccus Road, Ben Avon, Pittsburgh, Pa. Recommended by J. A. Crenner.
- Kelly, R. C., Head Clerk, Pennsylvania Railroad, 101 Clearview Avenue, Pittsburgh, Pa. Recommended by J. L. Ely.
- Ketterer, Charles L., Load Dispatcher, Pittsburgh Railways Company, 300 Steuben street, Crafton, Pittsburgh, Pa. Recommended by H. D. Cudworth.
- Knoff, David R., Special Electrical Apprentice, Pennsylvania Railroad, 9 Lakemont Drive, Mt. Lebanon, Pittsburgh, Pa. Recommended by Roger Sarchet.
- Kohl, C. G., Assistant Foreman, Car Department, P. & L. E. R. R. Co., 1619 Vance Avenue, Coraopolis, Pa. Recommended by W. A. Adams.
- Laird, George R., Supervisor M. of E. Statistics, Pennsylvania Railroad, Pennsylvania Station, Pittsburgh, Pa. Recommended by W. B. Moir.
- Lockard, W. N., Agent, Pennsylvania Railroad, P. O. Box 525, Windber, Pa. Recommended by F. A. Jarres.
- Moss, R. C., Salesman, American Steel Foundries, Verona, Pa. Recommended by J. Porter Gillespie.
- North, D. P., Foreman, Car Department, Pennsylvania Railroad, 504 Marne Avenue, Monongahela, Pa. Recommended by W. B. Moir.
- Reinhardt, A. L., Gang Foreman, Car Shops, Pennsylvania Railroad, 430 Alexander Street, Monongahela, Pa. Recommended by W. B. Moir.
- Reiser, Frank, Gang Foreman, Pennsylvania Railroad, 510 Giffen Avenue, Mount Oliver, Pittsburgh, Pa. Recommended by W. B. Moir.
- Saville, E. W., Division Freight Agent, Pennsylvania Railroad, Pennsylvania Station, Pittsburgh, Pa. Recommended by W. C. Sommers.
- Thomas, John V., Wreck Foreman, Pennsylvania Railroad, Shire Oaks Car Shops, Elrama, Pa. Recommended by W. B. Moir.
- Truschel, J. H., Service Engineer, Flannery Bolt Company, 3429 Meadowcroft Avenue, Mt. Lebanon, Pittsburgh, Pa. Recommended by E. S. Fitz Simmons.

MR. CONWAY: I think that makes a total of nineteen.

PRESIDENT: Gentlemen, it is a pleasure for me to extend to you—and I am speaking now to the new members whose names have just been read—a hearty welcome as members of this organization. I believe you will find your association with us well worth while and hope you will not regret your membership in this Club.

Now, Mr. Conway, have you any other announcements?

MR. CONWAY: Since our last meeting we have had reported the death of four of our members:

E. C. Clark, Clerk, Pennsylvania Railroad, Pittsburgh, died July 4, 1938; J. G. Kulp, Train Master, Pennsylvania Railroad, Pittsburgh, died September 3, 1938; J. Donald Cunningham, Sales Engineer, Southern Wheel Company, Lakewood, Ohio, died October 7, 1938, and C. C. Loder, Representative, Plibrico Jointless Fire Brick Company, Pittsburgh, died October 19, 1938.

PRESIDENT: In accordance with our usual practice, suitable memorials covering the deaths of those gentlemen will appear in the proceedings of this meeting.

During the past year there has been some reference made to lack of appearance on this platform of the Chairmen of our various committees. I hope this is not construed as an indication of lack of interest on their part or lack of appreciation of the efforts of these Committees and their Chairmen on our part. You know, and I know, that these committees have been very active. They have done a very splendid job and I believe we might take advantage of the opportunity presented on this occasion of our annual meeting to have at least some of the Chairmen come to the platform and say a few words with respect to the activities of their Committees during the past year. We have a little time before the entertainment is scheduled to start and I am going to utilize it by asking a few of these gentlemen if they won't say something to you at this time. I think we might very appropriately start with the Subject Committee, of which Mr. H. H. Haupt of the Pennsylvania Railroad, is Chairman. You all know the very fine job that Mr. Haupt has done, ably assisted by that energetic assistant of his, Mr. Hayward, and by the way I might tell you that this Committee has already arranged for the speakers for the November and December meetings, which gives the new Chairman of the Subject Committee a running start for the coming fiscal year. Mr. Haupt, won't you please say a few words at this time.

MR. H. H. HAUPT: Fellow members: It has been my privilege to serve as Chairman of the Program Committee during the past year and the committee members and myself

want to take this opportunity to express to you appreciation of the confidence you have had in us and the support you have given us by your attendance. The chairmanship of the Program Committee is not such an easy task as one might think. I thought that it was easy in the beginning, but after the first few months when I really had to get busy and secure speakers for the succeeding months, it turned out to be a more difficult job than I had anticipated. The Committee, in every way, tried to present to this club a diversity of subjects as we progressed during the year and, by your attendance, as I have mentioned, we felt that what we were giving you was the proper thing.

As the retiring Chairman of the Committee, I want to express to you all my appreciation for your fine attendance. At this time I am not leaving the Program Committee; I am still a member and I am going to assure the Chairman you have elected tonight of my full support in the ensuing year in trying to present to you just as interesting programs, if not better, than we have had during the past year. I thank you.

PRESIDENT: Thank you very much, Mr. Haupt.

I think we should now hear from the Scotchman who is Chairman of the Membership Committee. When I spoke to him tonight about making a report of some kind, he wanted to know if we desired a report of the activities of his committee or whether we wanted him to sing another Scotch song. While we are all very glad to hear Bill sing, I told him that so far as this meeting was concerned, I thought we would have considerable entertainment before the night was over, and that for the benefit of the members of our Club we would like to have him say a few words as head of the Membership Committee. Mr. Moir.

MR. W. B. MOIR: Mr. President and gentlemen: You all heard the reading of the Secretary's report as to the activities of the Membership Committee during the year. All of the members were very active on the committee as well as the members of the club during these hard times, and I think we were very successful in taking in 111 members in the past year—considering conditions, and I think it is an opportune time right now to thank the members of the club as well as the members of the Membership Committee for their activity.



Our net loss in the membership was 161 and that was mainly due to members suspended for nonpayment of dues. I think that is very good considering the times. I want to call your attention to a sign back there on the mantelpiece. Many of you are probably wondering what that sign is back there. It says: "Railway Club of Pittsburgh. One Get One". That means for every member to go out and try to get a member. There are great possibilities in this club. There are lots of people in this town who are not members and I think we can go out and get some of those people. I believe that you will agree that the Membership Committee did a very good job and I think we may be able to double the membership we secured in the past year. We should be able to secure two or three hundred new members. I am asking everybody to do what they can in the next year and see if they can get some new members. I thank you.

PRESIDENT: Thank you very much, Mr. Moir.

Now, is Mr. James, the Chairman of the Advertising Committee, in the room. If so, could we have a few words from him. However, I would like to say for him that we feel very good about the activities and the success of the Advertising Committee during the past year.

Mr. Conway told me tonight that they had secured twelve new advertisements for our book and that means a great deal to us from the financial standpoint. We owe quite a debt of gratitude to Mr. James and the other members of that Committee for their fine work.

Now, we have another very important committee connected with this organization. It is the one that helps us all to get better acquainted with each other. It is the Committee that tries to make new members feel at home. If people do not get acquainted here with such an active committee as we have in the way of the Reception and Attendance Committee it is their own fault. Mr. J. W. Johnson has been chairman of that committee during the past year. He is your new nominee for Second Vice President, by the way. I am going to ask Mr. Johnson if he will not say a few words at this time. Mr. Johnson.

MR. J. W. JOHNSON: Mr. President, members of the Railway Club: This organization is designed to promote greater comradeship during the social hours it is our privilege to



be together. Our committee has attempted to function in order that you may find that friendship and that sociability that cements our relations and makes us good comrades. It has been a great pleasure to serve this organization as chairman of that committee. I feel we have accomplished much in our attempt to make you feel at home, and assure you of our earnest desire to please in every way. We are, indeed grateful for your support and we ask for a continuance of that spirit of cooperation. As I relinquish that duty this year I wish to offer thanks for the fine support of the members of the committee. May I not ask of you your continued support in this organization that it may grow and prosper under its new regime, so that we may find greater happiness in the years to come than we have in the past.

PRESIDENT: Thank you very much, John. Now, we have the Entertainment Committee. I am not going to ask Mr. Gillespie to say anything to you at this time because the time is getting short, and you are going to hear from Mr. Gillespie a little later on in the evening when he presents his entertainment for tonight. I am also not going to ask Mr. Smith of the Pittsburgh & Lake Erie Railroad, Chairman of the Finance Committee, to say anything, because I am afraid what he might say to us tonight would not sound very good with respect to the finances of the organization, and, with respect to the Chairman of the Executive Committee, we are going to hear from him a little later on in the program.

Now, I believe it would be a nice thing just at this moment to ask the members of the Executive Committee if they will please rise, be presented, and take a bow. Will the members of the Executive Committee please stand up at this time?

(The members of the Executive Committee arose and were presented to the Membership.)

PRESIDENT: Gentlemen, this brings us up to the election of officers for the new fiscal year. As you know, you have all had an opportunity to express your preference for the various nominees for the different positions becoming vacant at this time by paper ballot, and right at this moment I will ask the Secretary to submit the report of the tellers of the election.

MR. CONWAY: Gentlemen, we have received the report of the tellers of the election showing that there were cast 292

votes. The vote in each case was unanimous for the candidates listed on the ballot as follows:

PRESIDENT, J. D. Beltz, General Superintendent, B. & O. R. R. Company, Pittsburgh, Pa.

FIRST VICE PRESIDENT, Karl Berg, Superintendent Motive Power, P. & L. E. R. R. Company, McKees Rocks, Pa.

SECOND VICE PRESIDENT, J. W. Johnson, Superintendent, Railway Express Agency, Inc., Pittsburgh, Pa.

SECRETARY, J. D. Conway, Secretary-Treasurer, The Railway Supply Manufacturers' Association, Pittsburgh, Pa.

TREASURER, E. J. Searles, Manager, Schaefer Equipment Company, Pittsburgh, Pa.

#### EXECUTIVE COMMITTEE

Frank J. Lanahan (Chairman), Fort Pitt Malleable Iron Company, Pittsburgh, Pa.

A. Stucki, President, A. Stucki Company, Pittsburgh, Pa.

G. W. Wildin, Consulting Engineer (Retired), Westinghouse Air Brake Company, Pittsburgh, Pa.

W. S. McAbee, Vice President and General Superintendent, Union Railroad Company, East Pittsburgh, Pa.

E. W. Smith, Vice President, The Pennsylvania Railroad, Pittsburgh, Pa.

Louis E. Endsley, Consulting Engineer, 516 East End Avenue, Pittsburgh, Pa.

F. I. Snyder, Vice President and General Manager, B. & L. E. R. R. Company, Pittsburgh, Pa.

C. O. Dambach, Superintendent, P. & W. Va. Ry. Company, Pittsburgh, Pa.

R. H. Flinn, General Superintendent, The Pennsylvania Railroad, Pittsburgh, Pa.

R. P. Forsberg, Chief Engineer, P. & L. E. R. R. Company, Pittsburgh, Pa.

E. A. Rauschart, 948 Greenfield Avenue, Pittsburgh, Pa.

G. M. Sixsmith, Superintendent, The Pennsylvania Railroad, Pittsburgh, Pa.

#### SUBJECT COMMITTEE\*

John B. Wright (Chairman), Assistant Vice President, Westinghouse Air Brake Company, Wilmerding, Pa.

H. H. Haupt, General Superintendent Motive Power, The Pennsylvania Railroad, Pittsburgh, Pa.

G. H. Burnette, Assistant Chief Engineer, P. & L. E. R. R. Company, Pittsburgh, Pa.

#### RECEPTION AND ATTENDANCE COMMITTEE\*

T. E. Britt, (Chairman), Division Storekeeper, B. & O. R. R. Company, Pittsburgh, Pa.

T. F. Sheridan (Vice Chairman), Assistant to Superintendents Motive Power and Rolling Stock, P. & L. E. R. R. Co., McKees Rocks, Pa.

George B. Farlow, Division Engineer, B. & O. R. R. Company, Pittsburgh, Pa.

C. W. Trust, Assistant Traffic Manager, U. S. Steel Corporation Subsidiaries, Pittsburgh, Pa.

C. M. Wheeler, Assistant District Manager, Union Switch & Signal Company, Swissvale, Pa.

J. Porter Gillespie, Vice President in Charge of Railroad Sales, Lockhart Iron & Steel Company, Pittsburgh, Pa.

W. F. Ambrose, Master Mechanic and Master Car Builder, Aliquippa & Southern Railroad, Aliquippa, Pa.

C. E. Adams, Division Superintendent, The Pennsylvania Railroad, Pittsburgh, Pa.

W. P. Buffington, Traffic Manager, Pittsburgh Coal Company, Pittsburgh, Pa.

William C. Hansen, Assistant Manager, A. Stucki Company, Pittsburgh, Pa.

C. H. Reymer, Sales Representative, Oliver Iron & Steel Corporation, Pittsburgh, Pa.

J. W. Boyd, Superintendent, Monongahela Railway Company, Brownsville, Pa.

Thomas E. Cannon, (Retired), P. & W. Va. Ry. Company, 640 Marshall Avenue, St. Paul, Minn.

T. W. Carr, Superintendent Rolling Stock, P. & L. E. R. R. Company, McKees Rocks.

D. C. Carroll, Assistant Agent, The Pennsylvania Railroad, Pittsburgh, Pa.

S. G. Down, Vice President, Westinghouse Air Brake Company, Wilmerding, Pa.

#### ENTERTAINMENT COMMITTEE\*

Vincent Kroen (Chairman), Supervisor Express Service, The Pennsylvania Railroad, Pittsburgh, Pa.

J. S. Lanahan (Vice Chairman), Fort Pitt Malleable Iron Company, Pittsburgh, Pa.

C. P. Schrecongost, Traffic Manager, Hillman Coal and Coke Company, Pittsburgh, Pa.

W. B. Moir, Chief Car Inspector, The Pennsylvania Railroad, Pittsburgh.

W. C. Burel, Master Mechanic, Western Allegheny Railroad, Kaylor, Pa.

H. E. Chilcoat, General Manager of Sales, Koppel Division, Pressed Steel Car Company, Inc., Pittsburgh, Pa.

F. L. Foster, Superintendent Freight Transportation, P. & L. E. R. R. Company, Pittsburgh, Pa.

#### FINANCE COMMITTEE\*

M. A. Smith (Chairman), General Manager, P. & L. E. R. R. Company, Pittsburgh, Pa.

R. S. Bull, Superintendent Power & Inclines, Pittsburgh Railways Company, Pittsburgh, Pa.

James Nagel, Assistant General Superintendent, Montour Railroad Company, Coraopolis, Pa.

George W. Fox, Secretary, Davis Brake Beam Company, Johnstown, Pa.

J. B. Diven, Superintendent Motive Power, The Pennsylvania Railroad, Pittsburgh, Pa.

#### ADVERTISING COMMITTEE\*

J. H. James (Chairman), Purchasing Agent, P. & L. E. R. R. Company, Pittsburgh, Pa.

T. R. Dickinson, Purchasing Agent, B. & L. E. R. R. Company, Pittsburgh, Pa.

Harry C. Graham, Vice President, Pittsburgh Screw & Bolt Corporation, Pittsburgh, Pa.

T. R. Fitzpatrick, Freight Traffic Manager, P. & L. E. R. R. Company, Pittsburgh, Pa.

W. F. Wilson, Manager, Pittsburgh Works, American Steel Foundries, Verona, Pa.

Joseph A. Crenner, District Manager, Dearborn Chemical Company, Pittsburgh, Pa.

John C. Shingledecker, Supervisor of Service Stations, The Pennzoil Company, Pittsburgh, Pa.

#### MEMBERSHIP COMMITTEE\*

Caleb R. Megee (Chairman), District Manager, Car Service Division, Association of American Railroads, Pittsburgh, Pa.



Lloyd Sutherland, (Vice Chairman), General Storekeeper, P. & L. E. R. R. Company, McKees Rocks, Pa.

J. L. O'Toole, Assistant to General Manager, P. & L. E. R. R. Company, Pittsburgh, Pa.

J. H. Ainsworth, Railroad Sales Department, Carnegie-Illinois Steel Corporation, Pittsburgh, Pa.

J. M. Fair, Engineer Maintenance of Way, The Pennsylvania Railroad, Pittsburgh, Pa.

S. S. Bruce, General Traffic Manager, Koppers Company, Pittsburgh, Pa.

G. W. Honsberger, Transportation Manager, Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa.

C. C. Pitcher, Assistant Superintendent, B. & O. R. R. Company, Pittsburgh, Pa.

T. Fitzgerald, General Manager, Pittsburgh Railways Company, Pittsburgh, Pa.

G. C. Harper, General Superintendent, Montour Railroad Company, Coraopolis, Pa.

Frank A. Jarres, Assistant Storekeeper, B. & O. R. R. Company, Pittsburgh.

C. S. Leet, Assistant General Manager, B. & L. E. R. R. Company, Pittsburgh, Pa.

R. C. McIntyre, Superintendent Motive Power, Union Railroad Company, East Pittsburgh, Pa.

H. C. Pringle, Vice President and Superintendent, Monongahela Connecting Railroad Company, Pittsburgh, Pa.

S. B. Riley, General Superintendent and Superintendent Motive Power, P. & W. Va. Ry. Company, Pittsburgh, Pa.

Frederick H. Eaton, Sales Engineer, American Car and Foundry Company, Pittsburgh, Pa.

C. W. Gottschalk, Assistant Traffic Manager, Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

(\*) In addition to the newly elected members, the complete committees are shown above, including those previously elected whose terms of office have not expired.

PRESIDENT: Gentlemen, you have just heard the result of the election of officers for the various positions for which nominated and I believe it would not be out of place for me to say at this moment that there are congratulations to be extended in both directions. I think the Railway Club of Pittsburgh is to be congratulated upon selecting and electing

such able men to carry on the work of this organization during the coming year, and I believe the men so elected are to be congratulated for your vote of confidence in them. It is now my pleasant duty to declare the election of these gentlemen, and with this announcement on my part I believe my duties as President of this organization come to an official end. You now have a new President. However, before asking Mr. Beltz to come to the platform so that he may be properly presented and the office officially turned over to him, I would just like to say a few words with respect to the past year. I do not feel that I can step aside without first telling you how pleasant it has been for me to serve you during this period. I have enjoyed every moment of this service and it will always be a pleasant remembrance during the balance of my lifetime. When you elected me President a year ago tonight or thereabouts, I felt I was the recipient of a very high honor and made up my mind at that time that I would not take the responsibilities of the position lightly, but would do everything I could to carry on the work of this Club in such a manner as to justify the confidence that you had placed in me. I was not unmindful of the fact that I was following in the footsteps of a long line of able men who had preceded me as President of this organization. They were men who had made a name for themselves and for the Club, and I felt I would have to step lively if I was to keep up the pace that they had set. While I am not emphasizing or pointing with any great amount of pride to any great progress made during the past year, nevertheless I feel that notwithstanding this was not a prosperous year for many of us, the splendid attendance at our various meetings, with the interest that was displayed in our programs, we did not go back very far, if at all. I hope you all agree with that summation of the situation.

That, gentlemen, is my swan song, and in a few moments I am going to take my seat down in front here with the other has-been presidents, and I hope I may always have the opportunity and privilege of being a regular attendant at future meetings. You have further honored me tonight by electing me a member of the Executive Committee for which I am deeply appreciative, and in this capacity I will have an opportunity, I hope, to render further service to our organization.

I now have a real pleasant duty to perform, and that is the presenting of your new President, Mr. J. D. Beltz of the

Baltimore & Ohio Railroad. Mr. Beltz is a man well known to me in recent years and a man who I have liked very much since becoming acquainted with him, and regardless of the fact that he is a competitor I still like him. I am confident that he is going to make you a splendid President and that progress of this organization will not suffer under his leadership. For myself, I can say that I am going to do everything I can to be of assistance to him, and I feel sure the boys of the Pennsylvania Railroad who are members of this Club would have me say for them that they will support him in every respect, and with that pledge, gentlemen, I will now ask Mr. Beltz to come to the platform and be presented to you. However, before he takes over the proceedings, I want to give him something to remember me by.

PRESIDENT: Gentlemen, my friends in the Motive Power Department of the Pennsylvania Railroad, and I think Mr. Haupt and that Assistant of his, Mr. Hayward, had a little to do with it—had this plaque as a new emblem of our Club made and presented to me recently. It is now my pleasure to turn it over to your new President, Mr. Beltz, and as I said before, it will be something for him to remember me by. I mean by that that as it will no doubt be his job to carry this plaque to and from the meetings, and you will notice that for this purpose a very fine carrying case has also been included, I am sure that on the occasion of each meeting he will remember me and the Pennsylvania Railroad, and I hope pleasantly.

MR. J. D. BELTZ: Mr. "Has-Been" and members of the Railway Club. Of course it is an honor to be President. It is a job I may not like too well because I cannot pull this hot stuff off like "Sixs" and cannot get away with it. I will do the best I can, however, but I am not forgetting that he passed this plaque on to me before he gave me the job of carrying this, so that is out. Before going any further I would like to have Mr. Berg, the First Vice President, stand.

(Mr. Berg stands as requested)

Mr. Berg will be my right hand bower here. You have seen the Second Vice President, Mr. Johnson. I do not believe Mr. Sixsmith called on one other Committee that should not be overlooked and that is the Executive Committee, and I



should like to call on Mr. Lanahan, the chairman of the Executive Committee.

MR. FRANK J. LANAHAN: Fellow Members and Newly Elected Officers: Under a delusion have I been laboring, and instead of congratulations being extended to our new coterie of officials, since Mr. Sixsmith has burdened you, Mr. Beltz, with all that paraphernalia, and it will be necessary to carry the laundry bag to and from each meeting hereafter, I think you are entitled to our sympathy. From a casual glance of that emblem tendered you, some of us from the classic precincts of McKees Rocks, are skeptical as to its affiliation with the Ku Klux Klan or some other dark secret order. You can readily comprehend that we of Hibernian ancestry, are not very tolerant of such contraptions. However, on the assumption that all that Past President Sixsmith has done is perfectly regular and in good order, cordial felicitations are extended to all you gentlemen who have taken office tonight, and we hope each of you in your respective positions will function to your own satisfaction and for the advancement of our dearly beloved Club.

Really, fellows, I think we should feel a little gay tonight, as it is our thirty-seventh birthday. What our organization has accomplished in that time is quite commendable. We have long since passed our Silver Jubilee and are well along to the Golden Jubilee. Let us hope that a good kind Providence will preserve in health and vigor many of our active participants of this evening, that they may be among those to enjoy thirteen years hence, the glories that will be associated with fifty years of useful life and contribution to the general well being that I am sure the Golden Jubilee will portray. The future of the Club is well assured by the class of members elected, while you gentlemen of long affiliation are not strangers to the cardinal principles which guide the selection of executives. First, the nominees for any position are chosen from the rank and file of the organization who have evinced interest and capability, and recognition is accorded to all the transportation systems that are associated with the Club. As instance, tonight the Baltimore and Ohio Railroad holds sway, where but a few minutes before Mr. Sixsmith of the Pennsylvania, sang his swan song. A year ago, it was one of the smaller railroads — Mr. E. A. Rauschart of the Montour Railroad was President, preceding him, was Mr. Forsberg of



the Pittsburgh & Lake Erie Railroad. If you gentlemen will note, these executives were selected from the railroads throughout this territory, each being given equal representation and no favoritism shown. The Executive Committee always have their eyes and ears open to watch for those who are active and talented and whose interest in the Club is apparent. These individuals are selected and tried out on Committees. As an illustration, Mr. Johnson, now Second Vice President, for a number of years served on the Reception and Attendance Committee. Tonight he advances to Second Vice President, and so it is with the other candidates. On behalf of the Executive Committee, our personal thanks are made to all these new officers. We extend to them encomiums and compliments for so efficiently performing the duties previously assigned to them. If time permitted, I would like to dwell upon the contributions that each of these newly elected officers have made to the general welfare of our organization, and the attention they gave personally to their respective appointments. You who are regular attendants have recognized "duty well done" in your votes and honored these gentlemen to the advancement they have received this evening.

May I here digress for a moment, and recall to you Mr. Cameron's address at our last meeting? As you are all aware, we have at every meeting an expert stenographer, but unfortunately, that evening when Mr. Cameron gave us his wonderful presentation on "Looking At Our Times", a death occurred in the family of our reporter and we were without our usual means of transcribing the talk of our speaker. This is greatly to be deplored, as all were visibly impressed by Mr. Cameron's remarks. There is just a possibility that some day we will have excerpts of it for distribution to the membership.

Now compliments have been paid to all the different people identified with the organization, let us take a moment to refer to a definite principle of this body—gratitude. In all the thirty-seven years of our history, a President has never relinquished his office without some manifestation of appreciation for the services rendered by him to the Club. Am sure you all agree that the active, energetic and very earnest gentleman who has wielded the gavel for the past twelve months, deserves recognition. So, on behalf of all you gentlemen, the Committee has something here that our Past

President may see and take home as visible evidence to the dear little lady who condones his faults and sometimes lauds his virtues. We have selected a token which mental telepathy has told us would be very acceptable in the Sixsmith domicile, and therefore we tender to our retiring executive something the family will enjoy, and which we hope at every meal will bring back recollections of Daddy's activities here. I am sure, Garnet, as you look around tonight and gaze at those queer caps adorning the intelligent countenances, see the smiling lips and broad grins on the large assembly here to do you honor, they create an indelible picture which will remain in your memory infinitely, and in any dark moments of life, cheer you greatly, realizing that there has been an appreciation of what you have done as presiding officer. On behalf of the entire membership of the Railway Club of Pittsburgh, I wish you the enjoyment of this gift for many years to come, and "God Speed".

(A beautiful chest of silver was presented to the retiring President, Mr. Sixsmith, amid applause.)

MR. SIXSMITH: Thank you very much, Mr. Lanahan, and gentlemen. For once in my life, words do not come very easy. I had thought when I stepped down from this platform a few moments ago that I was through. However, after listening to those kind words from Mr. Lanahan and being presented with this beautiful remembrance on behalf of the membership of the Club, I am certainly glad that I was not through. It is like being given another chance at the plate, or should I say, another down, which has been very prominently mentioned in football circles recently as another chance. This is a beautiful and generous token of remembrance and I hope of esteem, and I can assure you that it will be a constant reminder to me of one of the happiest years of my life. I can say nothing further now, except for myself and on behalf of Mrs. Sixsmith who will share equally with me the pleasures of this beautiful chest of silver, that we both thank you from the bottom of our hearts.

PRESIDENT BELTZ: Now, we have come to the time when we can have a little entertainment. Is Mr. Porter Gillespie ready?

(At this point a very entertaining program of vaudeville

was presented and enthusiastically received by the membership)

The program then presented was by the National Broadcasting Company, Inc., (KDKA) Pittsburgh, Pa., as follows:

Ollie O'Toole, M. C. and imitator.

Jack Taylor, comedian.

Faye Parker, popular songs.

The Weston Sisters Trio, songs in special arrangements.

Mason and Lynne, ballroom team.

The Three Silver Cyclones (roller skaters).

Don Dixon, accompanist.

The meeting now stands adjourned, and members and guests are invited to participate in the luncheon now being served.

J. D. CONWAY, Secretary.

# CONSTITUTION

## ARTICLE I

The name of this organization shall be "THE RAILWAY CLUB OF PITTSBURGH."

## ARTICLE II

### OBJECTS

The objects of this Club shall be mutual intercourse for the acquirement of knowledge by reports and discussion, for the improvement of railway operation, construction, maintenance and equipment, and to bring into closer relationship men employed in railway work and kindred interests.

## ARTICLE III

### MEMBERSHIP

SECTION 1. The membership of this Club shall consist of persons interested in any department of railway service or kindred interests, or persons recommended by the Executive Committee upon the payment of the annual dues for the current year.

SEC. 2. Persons recommended by the Executive Committee and by unanimous vote of all members present at any regular meeting of the Club may be made an Honorary Member and shall be entitled to all the privileges of membership and not be subject to the payment of dues or assessments.

## ARTICLE IV

### OFFICERS

The officers of this Club shall consist of a President, First Vice President, Second Vice President, Secretary, Treasurer and an Executive Committee of seven or more members, elected at the Annual Meeting of the Club, for a term of one year. There shall be a Finance Committee of five or more members; a Membership Committee of twelve or more members; an Entertainment Committee of seven or more members; a Reception and Attendance Committee of twelve or more members; a Subject Committee of three or more members; and an Advertising Committee of three or more members; all elected at the Annual Meeting, the term of office



to be specified, but in no case to exceed three years. Chairmen and Vice Chairmen of these committees where not named on the ballot will be elected from among the elected members by the Executive Committee.

## ARTICLE V

### DUTIES OF OFFICERS

SECTION 1. The President shall preside at all regular or special meetings of the Club and perform all duties pertaining to a presiding officer; also serve as a member of the Executive Committee.

SEC. 2. The First Vice President, in the absence of the President, will perform all the duties of that officer; the Second Vice President, in the absence of the President and First Vice President, will perform the duties of the presiding officer. The First and Second Vice Presidents shall also serve as members of the Executive Committee.

SEC. 3. The Executive Committee will exercise a general supervision over the affairs of the Club and authorize all expenditures of its funds.

SEC. 4. The Secretary will attend all meetings of the Club or Executive Committee, keep full minutes of their proceedings; preserve the records and documents of the Club, accept and turn over all moneys received to the Treasurer at least once a month, draw cheques for all bills, when approved by a majority of the Executive Committee present at any meeting of the Club or Executive Committee meeting. He shall have charge of the publication of the Club Proceedings and perform other routine work pertaining to the business affairs of the Club under direction of the Executive Committee.

SEC. 5. The Treasurer shall receipt for all moneys received from the Secretary, and deposit the same in the name of the Club within thirty days in a bank approved by the Executive Committee. All disbursements of the funds of the Club shall be by check signed by the Secretary and Treasurer.

SEC. 6. The Subject Committee will arrange programs and select speakers for the regular meetings of the Club and perform such other duties as may be assigned them by the President or First and Second Vice Presidents, working in conjunction with the Entertainment Committee as may be

required. The Chairman of the Subject Committee will serve as an advisory member of the Executive Committee.

SEC. 7. The Membership Committee will actively engage in building up and maintaining the list of active members of the Club and perform such other duties as may be assigned them by the President or First and Second Vice Presidents. The Chairman of this Committee will serve as an advisory member of the Executive Committee.

SEC. 8. The Advertising Committee will solicit advertisements for the Official Proceedings and perform such other duties as may be assigned them by the President or First and Second Vice Presidents. The Chairman of this Committee will serve as an advisory member of the Executive Committee.

SEC. 9. The Reception and Attendance Committee will receive members, guests and visitors at the meetings and generally assist in promoting social intercourse and good fellowship, securing attendance of the members, and performing such other duties as may be assigned them by the President or First and Second Vice Presidents. The Chairman of this Committee will serve as an advisory member of the Executive Committee.

SEC. 10. The Entertainment Committee will perform such duties as may be assigned them by the President or First and Second Vice Presidents, and such other duties as may be proper for such a committee.

SEC. 11. The Finance Committee will perform the duties of an auditing committee to audit the accounts of the Club at the close of a term or at any time necessary to do so and perform such other duties as may be assigned them by the President or First and Second Vice Presidents.

## ARTICLE VI

### ELECTION OF OFFICERS

SECTION 1. The officers shall be elected at the regular annual meeting as follows, except as otherwise provided for:

SEC. 2. The President will appoint a Nominating Committee of five members, three of whom must be regularly elected members of the Executive Committee, who shall at the September meeting recommend nominations for all offices to be filled at the annual meeting and these, together

with any other nominations which may be made from the floor under proper procedure, will be printed and mailed as a letter-ballot to all of the members of the Club, not less than twenty days previous to the Annual Meeting, by the elective members of the Executive Committee. Each member may express his choice for the several offices to be filled by properly marking the letter-ballot and returning it to the Chairman of the Executive Committee.

SEC. 3. The elective members of the Executive Committee will present to the President the names of the members receiving the highest number of votes for each office, together with the number of votes received.

SEC. 4. The President will announce the result of the ballot and declare the election.

SEC. 5. Should two or more members receive the same number of votes, it shall be decided by a vote of the members present, by ballot.

## ARTICLE VII

### AMENDMENTS

Amendments may be made to this Constitution by written request of ten members, presented at a regular meeting and decided by a two-thirds vote of the members present at the next regular meeting.

# BY - LAWS

## ARTICLE I

### MEETINGS

SECTION 1. The regular meetings of the Club shall be held at Pittsburgh, Pa., on the fourth Thursday of each month, except June, July and August, at 8 o'clock P. M.

SEC. 2. The annual meeting shall be held on the fourth Thursday of October each year.

SEC. 3. The President may, at such times as he deems expedient, or upon request of a quorum, call special meetings.

## ARTICLE II

### QUORUM

At any regular or special meeting twenty-five members shall constitute a quorum.

## ARTICLE III

### DUES

SECTION 1. The annual dues of members shall be Two Dollars, payable in advance on or before the fourth Thursday of September each year.

SEC. 2. The annual subscription to the printed Proceedings of the Club shall be at the published price of One Dollar. Each member of the Club shall pay for both dues and subscription. Dues and subscription paid by members proposed at the meetings in September or October shall be credited for the following fiscal year.

SEC. 3. At the annual meeting members whose dues and subscription are unpaid shall be dropped from the roll after due notice mailed them at least thirty days previous.

SEC. 4. Members suspended for non-payment of dues shall not be reinstated until all arrearages have been paid.



## ARTICLE IV

### ORDER OF BUSINESS

1. Roll call.
2. Reading of the minutes of preceding meeting.
3. Reception of new members.
4. Announcements and communications.
5. Appointment of committees.
6. Reports of officers or committees.
7. Unfinished business.
8. New business.
9. Election of officers.
10. Presentation of program and discussion.
11. Adjournment.

## ARTICLE V

### PUBLICATIONS

SECTION 1. The Proceedings or such portion as the Executive Committee may approve shall be published (standard size, 6x9 inches) and mailed to the members of the Club or other similar clubs with which exchange is made.

## ARTICLE VI

The stenographic report of the meetings will be confined to resolutions, motions and discussions of papers unless otherwise directed by the presiding officer.

## ARTICLE VII

### AMENDMENTS

These By-Laws may be amended by written request of ten members, presented at a regular meeting, and a two-thirds vote of the members present at the next meeting.

# **In Memoriam**

**E. C. CLARK**

**Joined Club October 24, 1935**

**Died July 4, 1938**

**J. G. KULP**

**Joined Club February 25, 1932**

**Died September 3, 1938**

**J. DONALD CUNNINGHAM**

**Joined Club October 22, 1931**

**Died October 7, 1938**

**C. C. LODER**

**Joined Club February 28, 1935**

**Died October 19, 1938**

# MEMBERS

- Adair, V. B.,  
Tester,  
Westinghouse Air Brake Co.,  
Box 193,  
Wilmerding, Pa.
- Adams, Charles E.,  
Superintendent,  
Pennsylvania Railroad,  
Pennsylvania Station,  
Pittsburgh, Pa.
- Adams, Frank W.,  
Local Storekeeper,  
B. & O. R. R.,  
137 Minooka St.,  
Mt. Oliver Station,  
Pittsburgh, Pa.
- Adams, Walter A.,  
Chief Clerk,  
P. & L. E. R. R.,  
230 Ohio Ave.,  
Glassport, Pa.
- Ainsworth, J. H.,  
Railroad Sales Department,  
Carnegie-Illinois Steel Corp.,  
Carnegie Bldg.,  
Pittsburgh, Pa.
- Ainsworth, John R.,  
Special Apprentice,  
Westinghouse Air Brake Co.,  
353 Marguerite Ave.,  
Wilmerding, Pa.
- Aivalotis, John,  
Car Foreman,  
B. & O. R. R. Co.,  
Midway, Pa.
- Allderdice, Norman,  
Sales Representative,  
Frank M. Knox Co.,  
P. O. Box 46,  
Sewickley, Pa.
- Allen, Earl M.,  
Engineer (Signal),  
Union Switch & Signal Co.,  
1318 Lancaster Ave.,  
Pittsburgh (18), Pa.
- Allison, John,  
Engineer,  
Pgh. Steel Foundry Corp.,  
Glassport, Pa.
- Ambrose, W. F.,  
M. M. & M. C. B., Aliquippa  
& So. R. R.,  
1301 Meadow St.  
Aliquippa, Pa.
- Ames, Louis,  
Supervisor A. E. D. Dept.,  
Air Reduction Sales Co.,  
1116 Ridge Ave.,  
N. S., Pittsburgh, Pa.
- Anderegg, G. W.,  
Electrician,  
P. & L. E. R. R. Co.,  
814 Freeland St.,  
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- Anderson, Burt T.,  
General Sales Manager,  
Union Switch & Signal Co.,  
Swissvale, Pa.
- Anderson, G. S.,  
Foreman,  
Pennsylvania System,  
Box 19, Penna. Station,  
Pittsburgh, Pa.
- Anderson, J. P.,  
Chief Engineer,  
Pressed Steel Car Co. Inc.,  
McKees Rocks, Pa.
- Angel, A. J.,  
Purchasing Agent,  
P. & W. Va. Ry. Co.,  
Wabash Building,  
Pittsburgh, Pa.
- Anne, George E.,  
Representative,  
American Brake Shoe &  
Foundry Co.,  
R. D. 2,  
Hollidaysburg, Pa.
- Arensberg, F. L.,  
President,  
Vesuvius Crucible Co.,  
Box 29,  
Swissvale, Pa.
- Armstrong, C. B.,  
Railway Sales Manager,  
Central Division,  
Air Reduction Sales Co.,  
332 South Michigan Ave.,  
Chicago, Ill.

Arnold, J. J.,  
Sales Dept.,  
Pressed Steel Car Co. Inc.,  
Grant Building,  
Pittsburgh, Pa.

Ashley, F. B.,  
Vice President,  
Pruett Schaffer Chemical Co.,  
Tabor St.,  
Corliss Station,  
Pittsburgh, Pa.

Atkins, T. Earl,  
Branch Manager,  
The Pennzoil Company,  
Chamber of Commerce  
Building,  
Pittsburgh, Pa.

Aulbach, A. J.,  
Yardmaster, P. & L. E. R. R.,  
318 Quincy Ave.,  
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Pittsburgh, Pa.

Babcock, F. H.,  
Safety Agent,  
P. & L. E. R. R.,  
221 Magnolia Ave.,  
Mt. Lebanon,  
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Bacon, J. L.,  
Manager of Sales,  
Valve Pilot Corporation,  
230 Park Avenue,  
New York, N. Y.

Badgett, Stephen H.,  
Engineering Dept.,  
Pressed Steel Car Co. Inc.,  
120 N. Sprague Ave.,  
Bellevue, Pittsburgh, Pa.

Baer, Harry L.,  
Pres., Water Treatment Co.  
of America,  
1536 Madison Ave.,  
N. S., Pittsburgh, Pa.

Bagaley, William W.,  
Purchasing Agent,  
H. K. Porter Co.,  
7 Vilsack St.,  
Etna, Pa.

Bailey, J. C.,  
Car Service Agent,  
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350 Main St.,  
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Baily, J. H.,  
Vice President,  
Edgewater Steel Co.,  
P. O. Box 478,  
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Bair, J. K.,  
Locomotive Engineer,  
Union Railroad,  
415 Osborne St.,  
Turtle Creek, Pa.

Baker, Dale,  
Car Foreman,  
B. & O. R. R. Co.,  
Cor. State and Murry St.,  
East Salamanca, N. Y.

Bakewell, Donald C.,  
Vice President,  
Blaw Knox Co.,  
Farmers Bank Bldg.,  
Pittsburgh, Pa.

Ball, Fred M.,  
District Manager,  
Franklin Ry. Sup. Co., Inc.,  
Broad St. Station Bldg.,  
Philadelphia, Pa.

Ball, George L.,  
Secretary and Treasurer,  
Ball Chemical Co.,  
230 S. Fairmont Ave.,  
Pittsburgh, Pa.

Balla, J. A.,  
Foreman Telegraph & Signals,  
Pennsylvania Railroad,  
Homestead, Pa.

Balph, M. Z.,  
Assistant Engineer,  
P. & L. E. R. R.,  
3308 Sixth Ave.,  
Beaver Falls, Pa.

Balsley, J. I.,  
Asst. General Foreman,  
B. & O. R. R. Co.,  
406 Zara Street,  
Knoxville,  
Pittsburgh, Pa.

Balzer, C. E.,  
Inspector of Tests,  
P. & L. E. R. R.,  
3432 Allendale St.,  
Pittsburgh, Pa.



- Barclay, J. R.,  
Cost Engineer,  
P. & L. E. R. R.,  
4 Oakwood Road,  
Crafton, Pittsburgh, Pa.
- Barnett, George,  
Salesman,  
W. W. Lawrence & Co.,  
West Carson St.,  
Pittsburgh, Pa.
- Barney, Harry,  
President-Treasurer,  
Barney Machinery Co., Inc.,  
Union Trust Bldg.,  
Pittsburgh, Pa.
- Barnhart, B. F.,  
Road Foreman of Engines,  
B. & L. E. R. R.,  
9 Shady Ave.,  
Greenville, Pa.
- Barr, H. C.,  
Agent, P. & L. E. R. R.,  
131 Sycamore St.,  
Pittsburgh (11), Pa.
- Barrie, James S.,  
Material Inspector,  
New York Central Lines,  
130 Elmcnt St.,  
Crafton, Pittsburgh, Pa.
- Barton, E. E.,  
Asst. Local Treasurer,  
P. & L. E. R. R. Co.,  
1718 Ridge Avenue,  
Coraopolis, Pa.
- Bash, J. E.,  
District Inspector,  
R. R. Perishable Inspection  
Agency,  
P.R.R. Produce Terminal,  
Pittsburgh, Pa.
- Batchelar, E. C.,  
Manager, The Motch &  
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Assistant Agent,  
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Overbrook,  
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Pennsylvania Railroad,  
7217 Kedron St.,  
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- Bauer, R. B.,  
General Yard Master,  
P. & L. E. R. R. Co.,  
Dickerson Run, Pa.
- Baughman, G. W.,  
Union Switch & Signal Co.,  
103 Biddle St.,  
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- Baumann, Edward G.,  
Supervisor Tel. & Signals,  
Pennsylvania Railroad,  
East Waldheim Road,  
Aspinwall, Pa.
- Beall, C. R.,  
Chief Engineer,  
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- Beam, E. J.,  
Car Builder, Penna. System,  
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- Beam, William H.,  
Steam & Electrical Engineer,  
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- Beatty, Raymond N.,  
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- Beaver, J. D.,  
General Supt.,  
P. S. & N. R. R.,  
St. Marys, Pa.
- Beaver, R. C.,  
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Wilmerding, Pa.

Bergman, Carl R.,  
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Bierman, William  
Assistant to President,  
Pullman-Standard Car  
Manufacturing Co.,  
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Electrical Foreman,  
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Binau, Robinson J.,  
Engine House Foreman,  
B. & O. R. R. Co.,  
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Binyon, Thomas E.,  
Telegraph & Telephone Engr.,  
Pennsylvania Railroad,  
Pennsylvania Station,  
Pittsburgh, Pa.

Bishop, D. B.,  
Salesman,  
Dearborn Chemical Co.,  
Farmers Bank Bldg.,  
Pittsburgh, Pa.

Bishop, H. G.,  
Asst. Road Fore. of Engines,  
Pennsylvania Railroad,  
422 North Highland Ave.,  
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- Bishop, M. L.,  
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P. & W. Va. Ry. Co.,  
126 Sanford St.,  
20th Ward,  
Pittsburgh, Pa.
- Bisler, Walter E.,  
Sales Representative,  
Combustion Engineering  
Co., Inc.,  
First National Bank  
Building,  
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STATEMENT OF THE OWNERSHIP, MANAGEMENT,  
CIRCULATION, ETC., REQUIRED BY THE ACT  
OF CONGRESS OF MARCH 3, 1933

Of Official Proceedings of The Railway Club of Pittsburgh,  
published Monthly, except June, July and August, at Pitts-  
burgh, Pa., October 1, 1938.

STATE OF PENNSYLVANIA    )  
COUNTY OF ALLEGHENY    )    SS:

Before me, a Notary Public, in and for the State and  
county aforesaid, personally appeared, J. D. Conway, Secre-  
tary, who, having been duly sworn according to law, deposes  
and says that he is the Editor of the Official Proceedings—  
Railway Club of Pittsburgh.

Publisher, Official Proceedings—The Railway Club of  
Pittsburgh.

Editor, J. D. Conway, 515 Grandview Avenue, Pittsburgh,  
Pa., (19th Ward.)

Managing Editor, J. D. Conway, 515 Grandview Avenue,  
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President, G. M. Sixsmith, Pittsburgh, Pa.

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Sworn to and subscribed before me this 29th day of Sep-  
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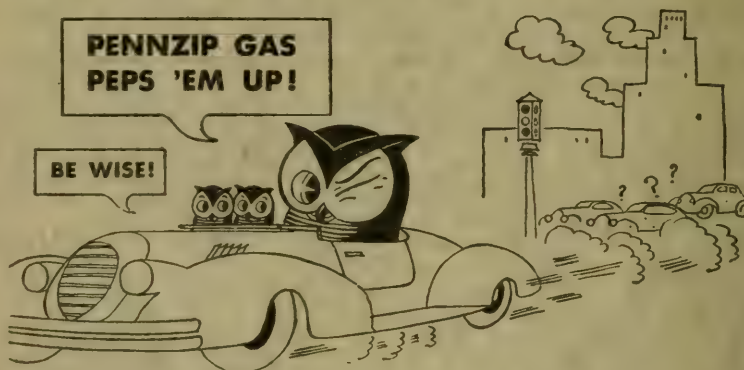
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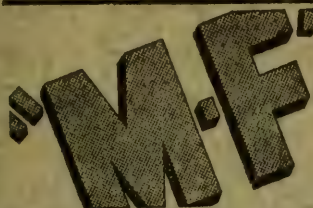
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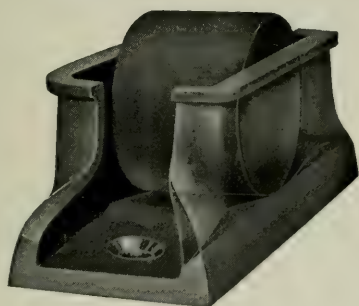
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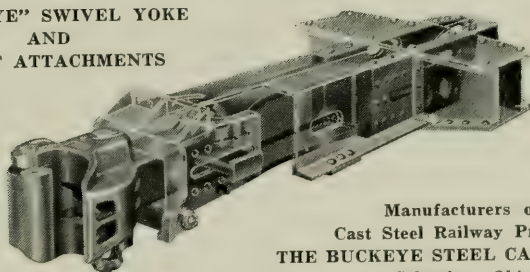


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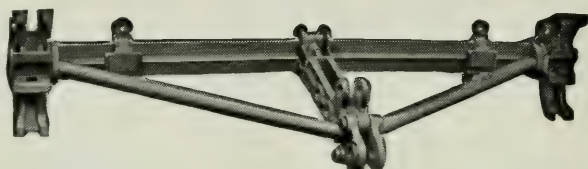
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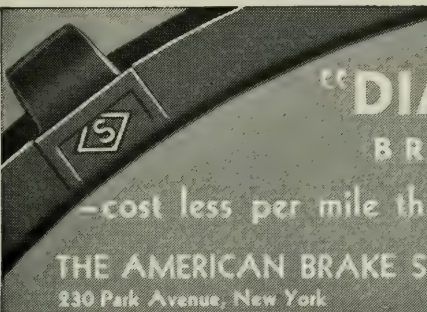
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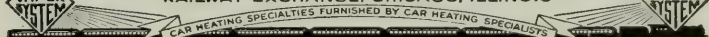
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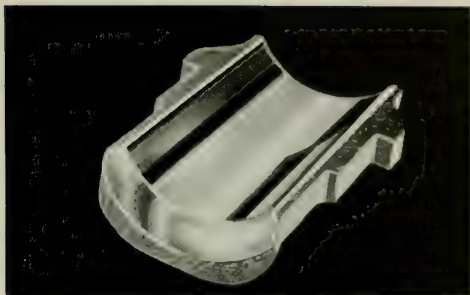
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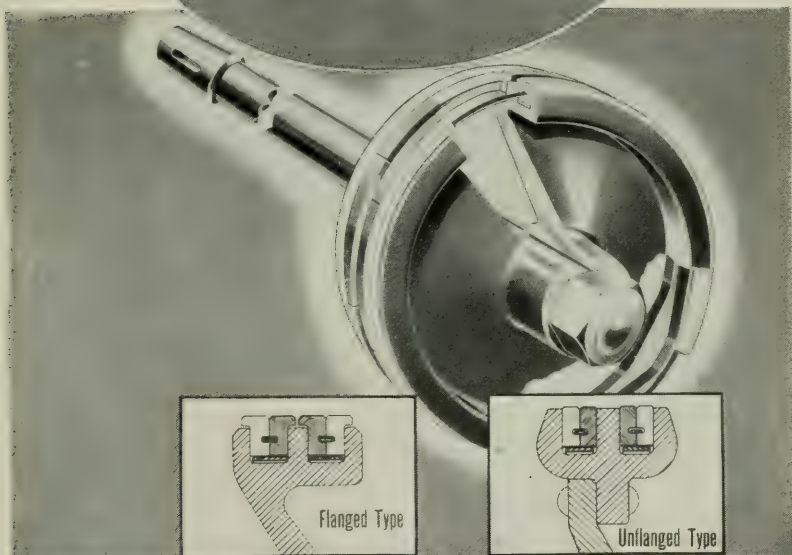
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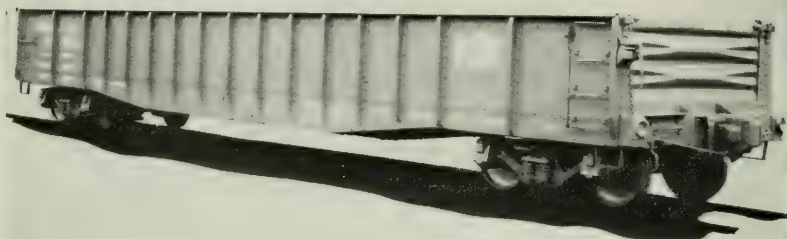
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| National Malleable and Steel Castings Co. ....  | iv          | Youngstown Steel Car Corporation .....                     | xii         |

NOTE—This form to be filled out in full by typewriter or printed and mailed to J. D. Conway, Secretary, 1941 Oliver Building, Pittsburgh, Pa. Membership fee, including dues, is \$3.00 for each fiscal year or part thereof, except those proposed in September or October. Those proposed in these months will be credited upon payment for the following fiscal year. Dues are payable in advance.

The fiscal year ends with the month of October.

### The Railway Club of Pittsburgh:

19\_\_\_\_\_

Gentlemen:

Will you kindly consider my Application for Membership in your Club at the next meeting:

Name\_\_\_\_\_

Title\_\_\_\_\_

Company\_\_\_\_\_

My Address\_\_\_\_\_

Recommended by\_\_\_\_\_



**OFFICIAL PROCEEDINGS**  
**OF**  
**The Railway Club of Pittsburgh**

Organized October 18, 1901

Vol. XXXVIII  
No. 1

**Pittsburgh, Pa., Nov. 17, 1938**

\$1.00 Per Year  
25c Per Copy

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First Vice President

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McKees Rocks, Pa.

Secretary

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The Railway Supply Manufacturers' Association,  
Pittsburgh, Pa.

Second Vice President.

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Supt., Railway Express Agency, Inc.,  
Pittsburgh, Pa.

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Manager, Shaefer Equipment Company,  
Pittsburgh, Pa.

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E. A. RAUSCHART, 948 Greenfield Avenue, Pittsburgh, Pa.  
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J. PORTER GILLESPIE, V. Pres. in Charge of Railroad Sales, Lockhart Iron & Steel Co., Pittsburgh, Pa.  
W. F. AMBROSE, Master Mechanic and Master Car Builder, Aliquippa & Southern R. R., Aliquippa, Pa.  
C. E. ADAMS, Division Superintendent, The Pennsylvania Railroad, Pittsburgh, Pa.  
W. P. BUFFINGTON, Traffic Manager, Pittsburgh Coal Company, Pittsburgh, Pa.  
WILLIAM C. HANSEN, Assistant Manager, A. Stucki Company, Pittsburgh, Pa.  
C. H. REYMER, Sales Representative, Oliver Iron and Steel Corp., Pittsburgh, Pa.  
J. W. BOYD, Superintendent, Monongahela Railway Company, Brownsville, Pa.  
THOMAS E. CANNON (Retired), P. & W. Va. Railway Company, 640 Marshall Avenue, St. Paul, Minn.  
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D. C. CARROLL, Assistant Agent, The Pennsylvania Railroad, Pittsburgh, Pa.  
S. G. DOWN, Vice President, Westinghouse Air Brake Company, Wilmerding, Pa.

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 GEORGE W. FOX, Secretary, Davis Brake Beam Company, Johnstown, Pa.  
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 T. R. DICKINSON, Purchasing Agent, B. & L. E. Railroad Company, Pittsburgh, Pa.  
 HARRY C. GRAHAM, Vice President, Pittsburgh Screw & Bolt Corp., Pittsburgh, Pa.  
 T. R. FITZPATRICK, Freight Traffic Manager, P. & L. E. Railroad Company, Pittsburgh, Pa.  
 W. F. WILSON, Manager, Pittsburgh Works, American Steel Foundries, Verona, Pa.  
 JOSEPH A. CRENNER, District Manager, Dearborn Chemical Company, Pittsburgh, Pa.  
 JOHN C. SHINGLEDECKER, Supervisor of Service Stations, The Pennzoil Co., Pittsburgh, Pa.

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 T. FITZGERALD, General Manager, Pittsburgh Railways Company, Pittsburgh, Pa.  
 G. C. HARPER, General Superintendent, Montour Railroad Company, Coraopolis, Pa.  
 FRANK A. JARRES, Assistant Storekeeper, B. & O. Railroad Company, Pittsburgh, Pa.  
 C. S. LEET, Assistant General Manager, B. & L. E. Railroad Company, Pittsburgh, Pa.  
 R. C. McINTYRE, Superintendent, Motive Power, Union Railroad Company, East Pittsburgh, Pa.  
 H. C. PRINGLE, Vice Pres. and Supt., Monongahela Connecting R. R. Company, Pittsburgh, Pa.  
 S. B. RILEY, Gen. Supt. and Supt. Motive Power, P. & W. Va. Railway Company, Pittsburgh, Pa.  
 FREDERICK H. EATON, Sales Engineer, American Car and Foundry Company, Pittsburgh, Pa.  
 C. W. GOTTSCHALK, Asst. Traffic Manager, Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

## PAST PRESIDENTS

|                   |                                  |
|-------------------|----------------------------------|
| *J. H. McCONNELL  | October, 1901, to October, 1903  |
| *L. H. TURNER     | November, 1903, to October, 1905 |
| *F. H. STARK      | November, 1905, to October, 1907 |
| *H. W. WATTS      | November, 1907, to April, 1908   |
| *D. J. REDDING    | November, 1908, to October, 1910 |
| *F. R. McFEATHERS | November, 1910, to October, 1912 |
| *A. G. MITCHELL   | November, 1912, to October, 1914 |
| *F. M. McNULTY    | November, 1914, to October, 1916 |
| *J. G. CODE       | November, 1916, to October, 1917 |
| *D. M. HOWE       | November, 1917, to October, 1918 |
| *J. A. SPIELMAN   | November, 1918, to October, 1919 |
| H. H. MAXFIELD    | November, 1919, to October, 1920 |
| FRANK J. LANAHAN  | November, 1920, to October, 1921 |
| *SAMUEL LYNN      | November, 1921, to October, 1922 |
| *D. F. CRAWFORD   | November, 1922, to October, 1923 |
| *GEO. D. OGDEN    | November, 1923, to October, 1924 |
| A. STUCKI         | November, 1924, to October, 1925 |
| *F. G. MINNICK    | November, 1925, to October, 1926 |
| G. W. WILDIN      | November, 1926, to October, 1927 |
| E. J. DEVANS      | November, 1927, to October, 1928 |
| W. S. McABEE      | November, 1928, to October, 1929 |
| E. W. SMITH       | November, 1929, to October, 1930 |
| LOUIS E. ENDSLEY  | November, 1930, to October, 1931 |
| *JOHN E. HUGHES   | November, 1931, to October, 1932 |
| F. I. SNYDER      | November, 1932, to October, 1933 |
| C. O. DAMBACH     | November, 1933, to October, 1934 |
| R. H. FLINN       | November, 1934, to October, 1935 |
| R. P. FORSBERG    | November, 1935, to October, 1936 |
| E. A. RAUSCHART   | November, 1936, to October, 1937 |
| G. M. SINSMITH    | November, 1937, to October, 1938 |

\*—Deceased.

Meetings held fourth Thursday of each month except June, July and August.

## PROCEEDINGS OF MEETING

NOVEMBER 17, 1938

The meeting was called to order at the Fort Pitt Hotel at 8:00 o'clock, Eastern Standard Time, with President J. D. Beltz in the Chair.

Registered attendance, 304 as follows:

### MEMBERS

|                    |                         |
|--------------------|-------------------------|
| Adams, Frank W.    | Dalzell, W. E.          |
| Ainsworth, J. H.   | Dambach, C. O.          |
| Allison, John      | Davis, Charles S.       |
| Ambrose, W. F.     | Deakins, H. H.          |
| Anderson, G. S.    | Dean, E. E.             |
| Anderson, J. P.    | Derr, A. I.             |
| Ansman, J. M.      | Dickson, K. B.          |
| Babcock, F. H.     | Diven, J. B.            |
| Balla, J. A.       | Duff, William G.        |
| Balph, M. Z.       | Dunham, C. W.           |
| Barnett, George    | Ely, J. L.              |
| Beitsch, George F. | Endsley, Prof. Louis E. |
| Bell, Charles W.   | Falkenberg, R. E.       |
| Beltz, J. D.       | Farlow, G. B.           |
| Bender, H. P.      | Farmer, C. C.           |
| Berg, Karl         | Faustman, Paul L.       |
| Berg, Max          | Ferguson, George        |
| Beswick, R. M.     | Finegan, T. A.          |
| Binyon, T. E.      | Finger, P. E.           |
| Bisler, W. E.      | Flinn, R. H.            |
| Black, C. R.       | Foard, E. A.            |
| Blyth, F. G.       | Forsberg, R. P.         |
| Bone, H. L.        | Forsythe, George B.     |
| Boyer, W. W.       | Fox, George W.          |
| Britt, T. E.       | Fralic, C. F.           |
| Brown, E. F.       | Frauenheim, Pierce H.   |
| Buchanan, C. C.    | Fry, L. H.              |
| Buffington, W. P.  | Furch, George J.        |
| Burel, W. C.       | Galbraith, James R.     |
| Buzzerd, J. P.     | Geiser, W. P.           |
| Campbell, F. R.    | George, W. J.           |
| Carter, E. D.      | Gilbert, William J.     |
| Chaffin, H. B.     | Glaser, C. J.           |
| Christy, F. X.     | Glaser, J. P.           |
| Clardy, W. J.      | Gleeson, H. L.          |
| Clausen, H. C.     | Glenn, J. H.            |
| Code, C. J.        | Goda, P. H.             |
| Conway, J. D.      | Golden, A. B.           |
| Coombe, A. B.      | Goldstrom, G. E.        |
| Courtney, H.       | Goodwin, A. E.          |
| Cramer, W. A.      | Goss, John L.           |
| Cree, W. M.        | Goss, R. E.             |
| Crenner, Joseph A. | Gray, M. L.             |
| Cristman, P. J.    | Greenslade, G. R.       |

Groves, W. C.  
 Haller, Nelson M.  
 Hammer, C. S.  
 Hansen, William C.  
 Hassler, E. S.  
 Haupt, H. H.  
 Hayward, C.  
 Heed, H. L.  
 Heer, Walter  
 Heimbach, A. E.  
 Hemma, Charles H.  
 Hess, Charles A.  
 Hilgert, T. J.  
 Hilstrom, A. V.  
 Holbrook, E. L.  
 Holmes, E. H.  
 Honsberger, G. W.  
 Hopper, George  
 Huff, A. B.  
 Hunt, L.  
 Huston, F. T.  
 Irwin, R. D.  
 Jados, Walter T.  
 Jenness, D. H.  
 Johnson, J. W.  
 Kaup, H. E.  
 Kearfott, W. E.  
 Keeney, J. H.  
 Kelly, Eugene V.  
 Kelly, L. J.  
 Kelly, R. C. A.  
 Kennedy, G. N.  
 Kentlein, John  
 Ketterer, C. L.  
 Koch, Edward J.  
 Kohl, C. G.  
 Kramer, W. E.  
 Laird, G. R.  
 Lanning, E. H.  
 Leonard, P. J.  
 Lesko, Andrew  
 Loeffler, G. O.  
 Long, R. M.  
 Lowry, William F., Jr.  
 Maliphant, C. W.  
 Manson, A. J.  
 Masterman, T. W.  
 Masters, William C.  
 Matchett, H. K.  
 Maxwell, Thomas  
 Mellett, D. D.  
 Metzger, Christian L.  
 Millar, C. W.  
 Miller, J. B.

Miller, W. J.  
 Mills, C. C.  
 Misner, George W.  
 Mitchell, W. S.  
 Moir, W. B.  
 Monk, J. Thomas  
 Morgan, Homer C.  
 Moulis, Frank  
 McHail, J. L.  
 McKim, Hollis  
 McLaughlin, H. B.  
 Nichols, Samuel A.  
 Nies, E. L.  
 Norris, J. L.  
 Orchard, Charles  
 Overholt, B. C.  
 Paisley, F. R.  
 Peirce, W. B.  
 Perreas, S. J.  
 Peterson, W. C.  
 Pickard, S. B.  
 Pitcher, C. C.  
 Pollock, M. C.  
 Pringle, Paul V.  
 Purchard, Paul  
 Reiser, Frank  
 Reymer, C. H.  
 Richard, L. J.  
 Riddle, F. L.  
 Robinson, L. L.  
 Rupp, E. S.  
 Rutter, H. E.  
 Ryan, D. W.  
 Schadt, A. D.  
 Schiller, John  
 Schweitzer, A. C.  
 Seivard, A. M.  
 Sekera, C. J.  
 Severn, A. B.  
 Sheridan, T. F.  
 Shull, C. O.  
 Sixsmith, G. M.  
 Skeeters, H. J.  
 Smith, G. M.  
 Stack, J. E.  
 Stamm, J. Duncan  
 Steiner, P. E.  
 Stevens, L. V.  
 Stocker, H. F.  
 Stoffregen, Louis E.  
 Stucki, A.  
 Suffern, R. J.  
 Sutherland, L.  
 Swank, W. E.



Swope, B. M.  
Sykes, A. H.  
Taylor, H. D.  
Teskey, Dr. Walter J.  
Tipton, George M.  
Tracey, J. B. A.  
Truschel, Joseph H.  
Unger, Dr. J. S.  
Urtel, E. J.  
Von Pein, A. N.  
Walther, G. C.

Yohe, J. K., Jr.

Wark, J. M.  
Westerman, M. A.  
Wheeler, C. M.  
Wickerham, F. A.  
Widmyer, Robert G.  
Wiland, O. M.  
Wilson, James R.  
Woodward, R. P.  
Wright, J. B.  
Wynne, F. E.  
Yarhouse, W. T.

## VISITORS

Adams, W. C.  
Angel, J. F.  
Batson, J. F.  
Belding, George A.  
Blickfeldt, E. H.  
Blosser, R. E.  
Boli, R. F.  
Braun, J. F.  
Capritz, Harry G.  
Canon, J. C.  
Carroll, M. L.  
Condon, Dr. Edward U.  
Conrad, R. J.  
Cook, F. R.  
Cox, J. A.  
Davis, William B.  
Deike, George H., Jr.  
Devlin, J. C.  
Diven, Francis D.  
Duff, J. Boyd  
Durkin, James E.  
Eisele, H. G.  
Farbocher, J.  
Fleming, L. T.  
Fraysier, J. S.  
Gannor, Dr. E. P.  
Gloss, A. G.  
Gray, H. M.  
Gregory, John  
Griffin, Gerald P.  
Grove, L. C.  
Harmon, Charles D.  
Haupt, W. Paul  
Hennessy, J. P.  
Hess, R. A.  
Joyce, L. V.  
Ketterer, Ralph L.  
Knapp, Franklin G.  
Kouche, N. J.

Laber, Ernest  
Laird, A. W.  
Leaf, Clayton  
Lewis, John  
Lewis, S. B.  
Marloff, George  
Mashl, S.  
Melody, James C.  
Melody, James T.  
Mertz, F. E.  
Miller, J. M.  
McCrossin, J. D.  
McGall, William J.  
Nicolout, Maurice  
Pascoe, Frank T.  
Pendray, G. E.  
Penney, Dr. G. W.  
Pennoyer, R. P.  
Poor, C. O.  
Powell, J. C.  
Reagan, P. H.  
Regney, W. B.  
Rentschler, Dr. H. C.  
Riley, L. G.  
Rindt, Karl  
Robinson, H. J.  
Ross, H. A.  
Ruch, R. C.  
Rudolph, H. V.  
Scherz, Arnold  
Sixsmith, J. M.  
Sixsmith, W. L.  
Sloan, J. R.  
Snyder, Charles H.  
Speaker, H. M.  
Stamm, Wendell V.  
Sudderth, H. N.  
Thomas, M. F.  
Thompson, W. E.

Tracey, Burke A.  
Uline, C. S.  
Vebleesen, H. J.

Vinogradoff, D. I.  
Vollmer, Paul F.  
Wheeler, Charles M., Jr.  
Willard, P. F.

PRESIDENT: Gentlemen, it is now 8:00 o'clock and the meeting will come to order. As the new President, and a new President always has something new, there are two things I would like to do. One thing is this: we have been coming about 6:00 o'clock in the evening and eating anywhere from 6:00 o'clock to 7:00 o'clock. We will set dinner for 6:30 and if there is only one man at the table he will be served at 6:30. I also believe we should start our meetings at 8:00 o'clock promptly and we will start them at that time if there are only a few people here. I do not believe there is any use waiting on somebody who is late. There are always some late. Now, if that meets with the approval of the membership we will do that. We will not call the roll and not read the minutes of the previous meeting. We do not have the minutes yet. They have been delayed, but will be out very soon.

Mr. Secretary, have you any new proposals?

SECRETARY: Mr. President and gentlemen, we have the following proposals:

Amend, J. H., Assistant Yard Master, Pennsylvania Railroad, 529 South Braddock Avenue, Pittsburgh, Pa. Recommended by W. B. Moir.  
Ansman, J. M., Movement Director, Pennsylvania Railroad, Pennsylvania Station, Pittsburgh, Pa. Recommended by W. B. Moir.  
Cramer, W. A., Chief Clerk, Traffic Department, U.S. Steel Corporation Subsidiaries, Frick Annex, Pittsburgh, Pa. Recommended by Harry L. Gleeson.  
Doscher, Fred H., Jr., Railway Sales, National Cylinder Gas Company, 510 Teece Avenue, Bellevue, Pittsburgh, Pa. Recommended by A. B. Golden.  
Hill, E. Bruce, Proprietor, E. M. Hill Lumber Company, 2601 Penn Avenue, Pittsburgh, Pa. Recommended by T. E. Britt.  
Jenness, D. H., Road Foreman of Engines, Pennsylvania Railroad, 620 North Sheridan Avenue, Pittsburgh, Pa. Recommended by J. B. A. Tracey.  
Power, Marvin D., Special Claim Agent, Pennsylvania Railroad, Pennsylvania Station, Pittsburgh, Pa. Recommended by W. B. Moir.  
Richard, L. J., Chief Claim Agent, Pennsylvania Railroad, Pennsylvania Station, Pittsburgh, Pa. Recommended by W. B. Moir.  
Rudisill, D. E., Division Engineer, Pennsylvania Railroad, Pennsylvania Station, Pittsburgh, Pa. Recommended by J. M. Fair.  
Schad, J. W., Master Mechanic, B. & O. R. R. Company, 960 Kennebec Street, Pittsburgh, Pa. Recommended by C. C. Pitcher.  
Skeeters, H. J., Special Claim Agent, Pennsylvania Railroad, 587 South Negley Avenue, Pittsburgh, Pa. Recommended by W. B. Moir.  
Webster, L. S., Manager, Underwood-Elliott-Fisher Company, 312 N. Jefferson Street, New Castle, Pa. Recommended by F. J. Kennedy.

PRESIDENT: When those applicants has been approved by the proper officers, they will become members.

Mr. Secretary, have you anything further to present in the way of information or communications?

SECRETARY: One of the sad features of a meeting is to announce the passing of some member of our club. Many of you, I know, would be well acquainted with this gentleman and remember him: William J. Knox, retired. He was Mechanical Engineer of the Buffalo, Rochester

and Pittsburgh Railway Company at Dubois, Pennsylvania. He joined the club February 24, 1905 and died May 26, 1938. We just received the notice very recently.

PRESIDENT: A suitable memorial will appear in our Proceedings. Mr. Secretary I believe you have an announcement to make as to the Chairmen of the various committees.

SECRETARY: The following Chairmen will serve this club for the ensuing year:

Executive Committee—Frank J. Lanahan, Chairman.

Subject Committee—John B. Wright, Chairman.

Reception and Attendance Committee—T. E. Britt, Chairman; T. F. Sheridan, Vice Chairman.

Entertainment Committee—Vincent Kroen, Chairman; J. S. Lanahan, Vice Chairman.

Finance Committee—M. A. Smith, Chairman.

Advertising Committee—J. H. James, Chairman.

Membership Committee—Caleb R. Megee, Chairman; Lloyd Sutherland, Vice Chairman.

PRESIDENT: Now we have someone with us who would like to make an announcement, Mr. William F. Lowry, Jr., representing the American Car and Foundry Company. Mr. Lowry:

MR. LOWRY: I think you can all hear me but I will step up here so that you can all see me. I happen to represent the American Car and Foundry Company and we will have in Pittsburgh next Wednesday, the day before Thanksgiving, at the B. & O. Passenger Train Shed, Track No. 1, two sample, lightweight, all-welded and riveted freight cars, one a box and the other a freezer. I think you will be interested in seeing these lightweight cars which is our contribution to the railroad fraternity and the American Railroads of the United States.

PRESIDENT: These cars will be on display at Track No. 1 in the train shed of the B. & O. Station on that date. There is an invitation extended to every man in this club to come over and take a look at those cars.

Now, is there any more business to come before us at this time?

Now, gentlemen, if you will turn your chairs that way, I will introduce the principal speaker and he will, in turn, introduce the various assistants he has with him.

I cannot say anything about this man, good, bad or indifferent, but he must know his business or he would not be with the Westinghouse Electric and Manufacturing Company. It is my pleasure to introduce to you Mr. G. Edward Pendray. (Applause.)

MR. PENDRAY: The question of whether or not we know our



business really does not enter into it because we have gathered here tonight to try to tell you something about what is going to happen in the future and since one man's guess is about as good as another's, all I can offer is the fact we have made some little study about these things.

## THE WORLD IN 1963

Address By G. EDWARD PENDRAY, Westinghouse Electric and Manufacturing Company, Before The Railway Club of Pittsburgh

Our principal object this evening is to see whether, by studying present trends, we can learn what our future may be.

It seems to me we ought to start by discussing the nature of our problem. The future in its fundamentals will perhaps be very much like the present. At least human beings won't be very much changed. And whatever their form of government, it is still likely that the major changes in their lives will come, not from the edicts of statesmen or politicians, but from the laboratories of scientists and the workshops of engineers.

It seems certain that scientists will make many fundamental discoveries in the next few years, and engineers will find ways to translate those discoveries into useful machines for the service of mankind. But the human being, being what he is, will not necessarily take advantage of these great gifts.

For if we look around us today, what do we find? Why, simply that most of us, rich and poor and in moderate circumstances, really are living from twenty to fifty years behind our own times, as the engineer sees the world. It is one of these often quoted truisms that it takes about thirty years for an invention to reach the stage of wide public acceptance, and even then by no means all of the public will accept and use it. Tonight, the people in this house represent, one should suppose, a high level of society. Perhaps the majority own automobiles and radios. But how many own airplanes—or even ride frequently in airplanes? How many have air-conditioned homes? How many shave with electric razors? How many have all-electric kitchens? How many even have enough light in their living rooms, as measured by accurate instruments?

For whatever else he is, the human being is certainly a creature of habit. No matter what the engineers may do on his behalf, the average person accepts the gift with most astonishing reluctance. He usually has to be "sold" with advertising, propaganda and the skillful wiles of the salesman. A huge and complex special mechanism of selling has to be set up to convince Mr. Average Citizen that he needs what every engineer knows he needs.

Now, with this background definitely in mind, and with caution in



our hearts, let us take a look at some of the things coming into existence today that may show us the shape of things to come.

Where shall we look for them? In the schools? In the churches? In the debating halls of the politicians? In the strongrooms of the dictators?

I think not. For in the long run schools, churches, politicians and all the other forces we consider to be our sources of leadership are molded and shaped by what transpire in the material world. And that world is being shaped today by men in laboratories—men who for the most part hastily disclaim any great world-shaking power. Men who are often astonished and bewildered by the forces they have released.

In preparation for this study tonight I have made a survey of the leading engineering and scientific laboratories of the country, seeking for fundamental new discoveries and developments that might broadly change our future. It was pretty hard to decide what is broad and fundamental. Some things that now seem most trivial may, in the course of the next quarter century, become of major importance. Many a development that now seems revolutionary may drop into relative obscurity.

What, to begin with, will the man of 1963 do for power? That problem will probably not become acute within the next twenty-five years, yet it is heartening to know that, should present sources of power fuels become scarce, moves are already afoot to replace them.

Down at the Smithsonian Institution, Dr. C. G. Abbot has been at work for several years on a solar power machine that is really promising. On every square yard of the earth's surface on clear days the sun pours an average of one horsepower of energy. If some way could be found to harness even the energy that falls on our desert waste-spaces, we would need no other source. A great many projects in the past have sought to capture this power. One solar power plant at Cairo, Egypt, in the last generation covered many acres, but the recovery of energy was so poor it never became practical. A year ago it was widely reported that the Russians were again trying solar power plants, but no definite data has as yet come out of that country.

But Dr. Abbot's apparatus is no mere system of plane mirrors, as have been many previous attempts. His sun-power gatherer consists of a parabolic aluminum mirror, shaped somewhat like a trough, down the focal center of which runs a tube carrying oil. The mirror, mounted on a polar axis like a telescope, keeps up with the sun by means of clockwork. The beams are powerfully focused on the central tube, in which the oil is rapidly heated. It is kept from losing this heat by means of a second tube, which surrounds the first with a vacuum. The oil is pumped, or runs by gravity into a reservoir, where it in turn heats water into steam. The efficiency of this steam plant is calculated at about 15 per cent, which compared with the one or two per cent of

previous solar power plants, begins to look promising indeed. Dr. Abbot, who spends many of his summers at Pasadena, California, has a "fireless cooker" set up there for summer cooking. The oven, heated by circulating oil, will cook rapidly even in cool or cloudy periods, because the oil reservoir holds its heat for several days.

Other efforts to harness the sun also challenge attention. Several laboratories have been at work on the problem of turning sun-power directly into electricity, without the intervention of steam, turbines, generators and the like. If this could be done with suitable efficiency, it would certainly work a revolution in the manufacture and transportation of power. Though several devices have worked—including copper oxide-copper cells and the like, the amount of current received is as yet only a small fraction, usually about one per cent, of the total energy available. It is too small, by any device so far announced, to be worth anything in practical use. But the future may tell another story. These experiments are worth watching.

There remain still wind, water, coal and oil, and these will be available in some form for a great many generations to come. Supplies of natural oil, which have been thought to be near the end many times in the last few years, will most probably last at least for the next twenty-five. And when they begin to run low, it is already a simple matter to make oil from coal by hydrogenation by the Bergius process. This process, now widely used to improve the quality of nature's oil, and in European countries to produce good oil from inferior coals, can probably be improved to such a point that gasoline can even be made from wood, or possibly even annual crops like cornstalks.

What about the food supply of the future?

In these days of planned agriculture, one would imagine that such a question is silly. Yet it may not be. Even in the government there are cross currents and contradictions. With one hand our Federal authorities are controlling production to keep it down. With the other they are developing the phosphorus wealth of the country with a view to making the country's acres more productive.

And entomologists tell us that man is steadily losing in his battle against the insects. As the Japanese beetle spreads over the country, as grasshoppers and boll weevils and other winged and armored foes strip our food and staple crops, we may well wonder what sort of planning will guarantee plenty of food and fabrics twenty-five years hence.

Well, it happens that in two or three laboratories in the country an answer to that question is even now developing. Professor Gericke's work at the University of California has recently attracted the most attention; what he calls soilless farming. The highbrows prefer to call it *hydroponics*, but the simple name is good enough.

Professor Gericke and his confreres have simply cut the earth out from under agriculture. By growing plants directly in warm water, to

which has been added the suitable and necessary chemicals which the soil ordinarily supplies, he has turned the farm into a factory, with all the controlled conditions that the word implies.

In the most successful form of the experiment, wooden tanks a few inches deep were used. They were four feet wide and ten feet long, for the sake of convenience. Over the top was stretched wire netting, to hold a bit of straw or shavings in which the seeds were planted. When the roots grow out they entangle themselves in the netting for a foothold, and suck up plentiful nourishment from the rich water beneath. The chemical salts, pre-mixed, are placed in perforated metal bottles, from which they diffuse slowly into the water as needed. The water is kept at the right temperature by electrical heating cables. The "farm" is covered by a building, in which any kind of climate desired can be maintained by air conditioning. The plants can even be made to grow at night as well as day, with the aid of artificial lights.

Thus, at one job, the problems of drought, frost, wind, hail, dust storms, disease and insects are solved. The milk cows will never jump the fence and ruin the corn on such a farm.

And what production? Professor Gericke's tomato vines grew fifteen feet tall, and are loaded down with fruit. His potatoes yield at the rate of 2,600 bushels per acre. And these are normal products, marketable and competitive with ordinary tomatoes and potatoes. Recently, it was announced that there are several "water farms" in California making a living in competition with natural farms. The production is so great, per square yard, some mathematician has calculated that water farms, situated in the salt marshes of New Jersey alone, could supply all the food needed by New York City. Another figured that fifteen square miles of farm could supply the country's potato needs. I don't vouch for these figures, or for any of the other fantastic conclusions that Professor Gericke's experiments have stirred up. It is surely too much to believe that great cities will soon need to depend for their entire food supply upon soilless farms. Or that even rare fruits and vegetables will be produced that way exclusively. Rail transportation is so swift, sure and inexpensive that no city even today lacks for strawberries in the winter, fruits from distant lands, exotic vegetables or unusual flowers.

But Professor Gericke's experiment does offer a new method of crop control. It can make certain that there will be food, come drought, disease or bugs. And who knows, soilless farms may be springing up almost anywhere in the next twenty-five years. We can imagine the modest city man of the year 1963 going down cellar to cultivate his carrots, or sending junior to the attic to harvest a mess of spinach for dinner, or even shouting to his wife to get her crop of beans out of the bathtub; he wants to take a shower! It is hard to imagine what kind



of Agricultural Adjustment Act will be needed to control over-cropping when any goldfish bowl might be turned into an illicit potato patch.

But Professor Gericke's isn't the only interesting botanical development that may affect the future food supply in queer ways. Up at Boyce Thompson Institute, in Yonkers, research men have been doing some strange things with plants lately. Farmers in the South wanted to use Northern-grown seed potatoes, because they were better. But the growing season in the North ended just at the planting season in the South. Potatoes won't sprout without a resting season of several weeks. So the farmers, both seed growers and seed users, were baffled.

They took the problem to Boyce Thompson Institute. The research men there discovered a gas that would make seed potatoes sprout immediately. It's a gas related to ethylene, often used as an anesthetic. But while ethylene will make people sleep, it wakes potatoes up. In fact, it is only necessary to seal the seed potatoes into a car filled with the gas. By the time they arrive at the field, they will be ready to plant.

More recently, Boyce Thompson solved another problem of horticulturalists—how to make plants grow from cuttings. Many plants, such as willows, grow naturally from cuttings, but most others do not. The plant experts began experimenting with some substances known as "auxins"—plant hormones. Presently they discovered chemicals which have the curious property of stimulating plants to send out roots from the stem, leaves, buds—almost anywhere. It is only necessary to cut off a snippet of the plant, soak it in the solution for a day or so, and then plant it. In fact, the chemicals can even be put up in the form of salve. Rubbed on almost any plant, rootlets can be made to grow at the point of application. The plant is then cut, and the cutting set out to grow. What it may mean in the rapid propagation of plants, the elimination of tedious, expensive and uncertain grafting processes and other horticultural problems may well be imagined.

What will the man of 1963 wear? For so many generations men have worn the same sort of clothes, that it may be twenty-five years is too short a time to expect much change. However, the style experts hold shows of men's styles every spring, attempting to interest us in fancy colors and more interesting fabrics, and who knows? Possibly they may ultimately wear down our resistance.

When that time comes, perhaps men will be wearing some of the remarkable new fabrics, such as those being developed in the Du Pont laboratories, which may be made fireproof as well as water-proof, insect-proof and all but wear-proof. Or possibly we shall be wearing glass clothing, made from threads of the finest glass. The art of making fabrics from this material is progressing rapidly, and these are already being used where fireproof qualities are especially desirable. In future, because of this fireproof nature, men may simply throw their clothing in the furnace to be cleaned, instead of sending it to the laundry.



I think we ought to look, next, at the house of the future. In what kind of a home will our man of 1963 live?

Well, to judge by recent trends, it will probably be a much different house from that of today. The average human habitation has changed little in fundamentals since almost prehistoric times. The greatest recent advance has been the development of air conditioning, but even that has had little acceptance in any but the most expensive homes.

Yet the man of the future is likely to live in a house that would seem strange indeed to us. It will probably be a "usonian" home, to borrow a word from Frank Lloyd Wright. That is, it will be a sort of machine for living. The engineer will transform it from a fortress and a bulwark against the weather into a kind of large, comfortable garment inhabited by a man and his family. As taste in such matters improves, the home will probably blend happily into its surroundings. From our present point of view, it will perhaps appear fragile—made of glass, and steel and aluminum, and no heavier or more massive than the demands upon it require.

Very likely it will be in appearance what is now called "modern"; except that this modernness will not be a striving for effect. Rather, the so-called modern style and materials will be adopted because they are economical, permanent, and convenient.

Now, at the rate the politicians are making all of us over, it is likely that everybody in 1963 will be alert, open-minded, gadget-conscious and well-to-do. Therefore, we can think of our man, though he is an average citizen, as living in a pretty well designed and equipped home. It almost goes without saying that this home will be air-conditioned—a matter to which I shall return in a moment. It will also be decorative, and very likely those decorations will be changeable at will, to conform to his every mood, or conversely, to induce a mood he would like to enjoy.

This leads us to an interesting experiment now going on in a lamp laboratory at Bloomfield, N. J. There, lighting engineers have set up an apartment—perhaps the first of its kind in the world, where light is not used for illumination alone, but also for what they choose to call "mood control". There are almost no visible lighting sources. The lights are concealed behind bookcases, above moldings, in glass-topped tables. In one of the rooms a handsome wall of pearly glass brick takes in one whole side. On another wall is a switchboard of many buttons.

Now, if the day should be cloudy, the lady of the house creates a cheerful atmosphere at will by pressing the right combination of buttons. Artificial sunlight streams in through the wall of glass brick. The room seems brilliant as on the finest day of spring, and you can almost hear the birds sing. Later in the day, when she may wish to have some guests in for cocktails, the matron of this experimental apart-

ment may set another combination of buttons, and the lights fall low. Pinks and purples appear; the room is filled with pools of dim color, and the right cocktail atmosphere is attained. In the describing, this sounds pretty theatrical—and that is exactly what it is—an attempt, very successful, to do for the home what lighting engineers have already done for the theatre in making light contribute to the mood of the beholder. In our home of 1963 we may well expect that this science will be carried into an art, and the man of the house, feeling a blue mood coming on—though heaven knows, in such an idyllic existence, what he might have to feel blue about—can turn on the “high” mood-lights, and cheer up instantly. Or if he wishes to entertain, he may have at his fingertips a combination of mood-lights ranging all the way from hilarity, for a bachelor group, to passionate, for a lady companion. It is possible that hosts and hostesses may in that day gain a reputation for their ability to control the mood-lights, as now they may be famous for cocktails or canapés.

If you take a fresh look at the ordinary house of today, you will note that it is cut up into a great many smallish rooms, separated by thick partitions, and strangest of all, all the doors have locks on them, as though the occupants somehow needed protection from one another. These locks and partitions undoubtedly are survivors of an ancient day when nobody could trust himself, even with members of his own family, but today they are mostly expensive and bothersome anachronisms.

There have been several promising experiments lately with houses in which the partitions are movable, so that an entire floor can be made into a single room, or rapidly converted into a number of smaller rooms, as need requires. A most daring house of this type was erected, experimentally, at an exhibition in New York. The inventor had provided a series of heavy curtains, along tracks on the ceiling by electric motors. At a whisk, these curtains could all be pulled aside into the walls, and the house turned into a large living room. At the touch of a finger, bedrooms, kitchen or study would appear, and progress from one to another of these rooms was made through slits in the curtains.

This idea proved a bit too radical for our present taste, but who can say whether some part of it will not be adopted in the near future? Certainly such a house would be inexpensive to build, and after one overcame his age-ingrained habit of thinking in terms of permanent walls, it might be a comfortable and pleasant place to live indeed.

Probably we ought to take a look at the library of that 1963 home as we pass by, for there is reason to believe that libraries, both public and private, are in for a good deal of change. Within the last few days I have held in my hand a small spool of film, not much larger than a dollar watch, which contained the reading matter of an entire volume. Used with a projecting machine about the size of an ordinary typewriter, this film could be read at will. *Bibliofilm Service*, which is introducing



this new idea under the good auspices of Science Service, tells me that more than 1,600 persons in the United States are now regularly purchasing books and tracts in film form, and reading them with small projectors. The cost is very low, and virtually every book in the Congressional Library may be had on order. So, in 1963, we may expect that an entire library can be stored in a small vault; that books such as we now have will be considered somewhat anachronistic. I do not look for their complete disappearance, however. They will be useful to lend to friends, to put behind the door to keep it open on windy days, and to put on the dining room chairs so junior can reach the table, just as they are today.

Will the home of the future be pre-fabricated? Well, that's more a question of economics than of engineering. More than likely, many inexpensive houses will be pre-fabricated. Well-to-do-folk will probably continue to build houses of a sort that show they can afford individuality. This is not a matter of science or engineering, but of human nature. However, some parts of all homes may be pre-fabricated. Kitchens, for example, may be purchased entire, as food-preparing machines. They may be cast in one piece, completely electrical in operation, and simply fitted into the house, in the same way that standard plumbing fixtures are now fitted into even the most expensive houses. Bathrooms may also be pre-fabricated entirely, as well as laundry rooms, and who knows—these 1963 bathrooms may even be silent.

It is my guess that homes of the future will make considerably more use of electricity than at present. The increasing "servant problem", the improvement of electrical appliances, the advance of all-electric kitchens and all-electric laundries, better wiring, better lighting—all these will make the future "machine for living" into primarily an electrical machine.

And that brings us back to a consideration of air conditioning. For in the future, this process of warming, cooling, circulating, cleaning and controlling the moisture of the air may be an even more thoroughly electrical job than it is at present. Some experiments of recent years indicate that heating in the future may be done by radiant energy, emanating from the walls, rather than by the awkward and comparatively inefficient method of heating water, which in turn heats air, which in turn heats the room. Another suggestion is that heating and cooling may be done by the same electrical apparatus, operating on the principle of the electric refrigerator. In the summer the cooling coils cool the air; in winter by reversing the cycle, the coils will heat it. Dehumidifying and its opposite may also be similarly managed electrically, and as for cleaning the air, that is already an electrical process, in the most modern air conditioning plants.

Now, it is manifestly impossible to bring more than a few of these newer wonders out of the laboratory to show you. But tonight we have

been able to assemble a few, and more important, to bring along the men chiefly responsible for their development. I am now going to introduce the man who has had a great deal to do with the development of the electrostatic air cleaner, which we call the Precipitron. He is going to explain and demonstrate a small model of the Precipitron for you, after which we shall resume our talk of the future. I wish to introduce Dr. G. W. Penney, Manager of the Electro-Physics Division, Westinghouse Research Laboratories.

## THE PRECIPITRON

DR. G. W. PENNEY: There are many ways of demonstrating atmospheric pollution. Recent figures from Cincinnati show a soot fall of over 350 tons per square mile in one month. Surveys have shown that atmospheric dust seriously increases pneumonia and other respiratory troubles. A former health commissioner of Chicago stated that the death rate of that city could be reduced by  $1/6$  if smoke could be eliminated. However, those who live in our soft coal burning cities do not need figures to appreciate the condition of the air, for there are so many visible effects on walls, draperies, clothing, or even when just looking down the street on many days.

In the last few years the development of air conditioning has aroused interest in air cleaning, but as so often happens in a new field, there are very serious misunderstandings. I have talked about the removal of smoke so often that I may be repeating for some of you, but in spite of that danger, I think it is necessary to say something about the character of smoke particles in order to explain the troubles encountered. One engineering society has set up a code for testing air cleaning devices. The test is made by injecting a certain weight of artificial dust into the air and measuring the weight of dust removed. This serves a useful purpose for comparison of devices, but it may also lead to serious misunderstanding. It is not uncommon to buy a device which removed 95 per cent of this test dust, and yet when cleaning some actual atmospheric dust the efficiency may be only 25 per cent.

The principal reason for such misunderstandings is that dust not only consists of all kinds of particles, but also a wide variation of particle sizes. The dust specified in the established code referred to is sifted through a 200-mesh screen which means that the dust consists of particles smaller than .0025 inches in diameter which we usually think of as a very fine material, but as compared to most atmospheric pollution, this "test dust" is a very coarse material. For example, ragweed pollen is  $8/10,000$  and a typical tobacco smoke particle is  $4/1,000,000$  inch, in diameter. We might compare this tobacco smoke particle to various things, e.g., its diameter is about  $1/8$  of the wave length of red light and only 2 or 3 times larger than the spacing between the molecules of the air, but such things are outside the experience of most of us and so have little meaning.



We usually want to see a thing to tell what it looks like. Suppose we take a microscope such as a physician would use for examining bacteria. Under this microscope most of the finer smoke particles are visible only as specks of disturbed light so that we cannot really see the particle. However, up at Harvard there is being built a microscope weighing a ton, which will magnify 50,000 diameters. Under this magnification a typical tobacco smoke particle would appear to be about .2" in diameter or about like a pea or navy bean. The black smoke particles in our city air would vary widely, but on an average would be roughly  $\frac{3}{4}$ -inch in diameter. The ragweed pollen particle which is the usual cause of hay fever to this magnification would appear to be 40 inches in diameter, while the test particle just passing through a 200-mesh screen would appear to be 10 ft. in diameter. This test particle weighs as much as 200,000,000 tobacco smoke particles. To give an extreme example of results obtained by different test methods, suppose we had an atmosphere containing one such test particle to 200,000 tobacco smoke particles and if we had a device which would take out all of the test particles but none of the tobacco particles, we would obtain an efficiency of 99.9 per cent by weight, but only  $\frac{2}{1000}$  of 1 per cent by count.

Another illustration of the wide difference in behavior of large and small particles is the rate at which they fall. The test particle mentioned which passes a 200-mesh screen if of the density of water, would fall 10 feet in less than  $\frac{1}{2}$  minute, while the tobacco smoke particle would require 3 months or 250,000 times as long to fall the same 10 feet.

The remarks may serve to give some idea of the difficulty of removing these fine particles. It is generally found impractical to filter out these fine smoke particles in the sense of providing pores so fine that the particles cannot pass through because such pores do not pass enough air for most air conditioning purposes. The slow rate of fall of such particles is likewise an illustration of the difficulty of removing such particles by impingement and other inertia devices. The final test is probably the difficulty of buying devices which will show a high efficiency when tested on these fine smoke particles.

We have all probably tried the high school experiment of rubbing a piece of hard rubber with cat fur or some similar material and then picking up pieces of paper by the electrostatic attraction. For most purposes this electrostatic attraction is so small as to be of little use. However, in the case of fine smoke particles, electrostatic force may be a million times the weight of the particle which makes it the most effective method known for pulling fine particles out of the air.

This principle is old. Sir Oliver Lodge back in the 1880's unsuccessfully attempted to use it to dissipate the London fog. Later Dr. Cottrell made a Precipitator which could be used in some applications, but it is only recently that anything using this principle has been avail-

able for air conditioning. This new device first puts an electric charge on each dust particle and then pulls these charged particles out of the air somewhat as a magnet would pull iron filings.

This model has been made up with glass sides so that the process of removing smoke can be observed. In making the process easy to see, some proportions have been changed, but the essential feature can be observed. Tobacco smoke is used because it is a fine smoke and is difficult to remove by other methods. It is generated in a pipe bowl and drawn downward through a piece of filter paper to demonstrate the fineness of the particles. A fan is mounted in the box. The smoke then passes upward through the "Precipitron." Near the bottom of the unit, two wires are supported by insulators and charged to 12,000 volts. This combination of wire and voltage releases electrons from the air molecules near the wire and the resulting positive ions are repelled from the wire and drift through the air. They tend to collect on any dust particle and once on the particle the charge cannot escape until contact is made with an electrode. Thus the dust particle holds a charge and is attracted to any negative electrode. Some of the smoke disappears to the lower or negative electrode. The charged smoke then travels up between the parallel plates which are oppositely charged and the smoke particles are attracted to the negative electrode where they remain until moved by washing, vibrating, or other method.

#### (DEMONSTRATES MODEL)

In commercial practice, the device is divided into the high voltage supply or power pack, the ionizing unit which generates the ions and charges the dust particles and the assembly of parallel plates which collects most of the dust. Both the ionizing unit and plate assemblies collect dust and are built of porcelain and metal, so that they can be washed out with water. They are built in relatively small standard units which can be arranged in assemblies of almost any desired size. In most applications they are built into a housing having a drain at the bottom. To dispose of the collected dust it is only necessary to shut off the power and turn on water and wash the unit in place. Usually an ordinary nozzle and hose are used for washing out the dust. The power pack is so designed as not to be damaged by an accidental short circuit such as might happen if the power were not turned off before turning on the water.

This process then consists of imparting an electric charge to each dust particle and electrically attracting the charged particles out of the air. Once on the plate the electric force disappears and the particle must be held by adhesion. Many dust particles naturally adhere, but occasionally it may be necessary to spray some adhesive, such as oil on to the plates after cleaning to hold the dust as it is collected.

The outstanding advantage of this electrostatic method is its ability to remove finest particles from large quantities of air.



There are several installations cleaning ventilating air for large buildings, e.g., a Woolworth store in New York City, the Chemistry Building at the Bureau of Standards, and the Field Building in Chicago. The installation in the Field Building cleans 250,000 cu. ft./min.

There are quite a number of installations in dwellings, in spite of the fact that the device is not really on the market for this type of application.

In industry there are a variety of applications, e.g., several pottery plants are using it to collect glaze, which is both dangerous to health when in the air and also of sufficient value to pay for recovery. It is being used to clean blast furnace gas so that the impurities will not clog the burners. In the manufacture of certain high grade carbides for cutting tools, it is being used to clean the air because dirt in the air gets into the powdered material before firing and leaves minute holes in the finished tool.

It is being used for the relief of hay fever and asthma. Of course, asthma may be due to various causes, but in a surprising number of serious cases, removing the very fine dust from the air has given complete relief from asthma.

MR. PENDRAY: Now I think we ought to turn our attention to another matter that is of great interest to us, and probably will interest the man of 1963 also—our health. In recent years we have seen such tremendous strides in medicine that it almost seems that nothing more is to be learned in that direction.

Yet to the medical man, as to the engineer, the greatest things are yet to be discovered; the greatest conquests yet to be made. The medical scientist looks back on generations of progress toward controlling disease; but he still sees before him enormous problems. Chief among them are those modern-day banes: cancer and mental disease. Also, there are the baffling problems that go to the fundamentals of things: the nature of life, and the nature of immunity to disease.

In preparation for this evening I have interviewed a number of medical men who are experts in these matters, and what I have to predict now is a composite of their opinions.

First, they believe that the near future will see tremendous strides in our knowledge of nutrition, and from that will come longer life, better health, and greater freedom from disease. It is possible, for example, that natural immunity to disease is closely bound up with what medicos call hypo-vitaminosis—a slight shortage of vitamins, not enough to cause the out-and-out deficiency diseases, like scurvy, but just enough to weaken the body in its battle against contagious disease.

Progress is expected along another major front—understanding of those mysterious agents of disease called viruses. Viruses, you know, were once thought to be like bacteria, but so small they would pass even

through porcelain filters. Small they are indeed, but evidently not like bacteria. They cause such diseases as smallpox, infantile paralysis, measles and the common cold, yet calculations show that they are so small they approximate the size of large molecules of protein, and if so, must be on the shadowy borderland between what is living and what is inanimate. Recently, Dr. W. M. Stanley of the Rockefeller Institute succeeded in getting a bit of the virus of a plant disease, tobacco mosaic, in crystalline form, disproving pretty conclusively that these viruses are protoplasmic in form. But if not living, what are they? They migrate, reproduce, have many of the attributes of living creatures.

Dr. Stanley's experiments open the way to an arresting observation. It may be that viruses are the simplest form of living creatures—self-reproducing molecules. And having reduced them to crystalline form, they can be analyzed, and perhaps even made synthetically in the laboratory. If that is done, will it not be that mystical artificial creation of life many of us have wondered about, and which philosophers have said was impossible? Of course, it may be impossible still, but here is a definite clue. We may expect great things to come from this line of research.

What about cancer? Many medical men confidently expect that a solution to the problem of cancer will come within the next few years. Not, perhaps, a cure for cancer—for curing a body of cancer may forever prove to be like curing a house of fire. Often the operation may be so radical as to severely damage the patient. But cancer prevention, through new light on the subject, is among the possibilities.

From what direction will this new light come? Doctors find it hard to say, but most of them think it will come from some totally unexpected direction. The conventional theories of cancer do not seem to be producing results. There may be a return to the old idea that the viruses have something to do with it; perhaps viruses spontaneously generated from previously healthy cells. Body chemistry may also be in on the reckoning, for research in those mysterious body messengers, the hormones, have revealed some curious and arresting facts. The female hormone, theelin, for example, turns out to be closely related on the one hand to such substances as Vitamin D, and on the other to certain tar products that are capable of producing cancer of the skin in animals. Might it be that some of these useful—and potentially dangerous—natural chemicals go wrong in the body? That what should have been theelin or Vitamin D makes the wrong turn, chemically, and comes out as a cancer producer? Then, too, there is a strong theory that cancer may be linked up somehow with heredity. Investigators have succeeded in breeding cancer-free strains of mice, and other strains that almost invariably develop some form of cancer. It may be that in future humans will select mates with this problem in mind, with a view to elimi-



nating especial susceptibilities to cancer, should further research prove that such a thing exists.

As for mental health: there are two broad attacks going forward which may bear important results in the next twenty-five years. One attack may be considered *mechanistic*. It consists of studying and diagnosing diseased and healthy minds by means of the so-called Berger rhythms—electrical brain waves. Electrodes are clamped to various parts of the head. The minute differences of electrical potential generated by the different portions of the brain are picked up and enormously amplified. These differences are seen to rise and fall according to a regular, somewhat complicated wave pattern. The waves differ between waking and sleeping, between work and rest, and between the normal mind in all these activities and the abnormal mind. This work is still in its infancy, but there is great hope that it may reveal what goes on in the mind, from an electrical, nerve-impulse point of view; may help to head off mental disease by giving advance warning, and may suggest methods of treatment.

Another—a therapeutic approach to the problem of mental disease—also gives promise. It consists of using shocking agents for some types of disease, notably schizophrenia, or dementia praecox. This disease is a form of withdrawal from life. The victim, finding the world too much for him, tends involuntarily to withdraw into a dream world of his own. He becomes silent, bewildered, and finally completely out of touch with reality. In recent months a number of more or less successful experiments have been made to shock such people back into reality. The agents usually used are large doses of insulin, which may have a shocking effect on non-diabetics, and anesthetics, many of which produce shock at the moment of losing consciousness. Schizophrenics so shocked sometimes become almost normal for a time, then gradually lapse back into the dream state. Subsequent shocks give longer periods of consciousness. The hope of experimenters is that enough shocks may ultimately produce a complete return to normal. Whether this can be done with safety and assurance will require more time to prove.

Another great field that will see much further development in the near future is that of public health. In the beginning, the art of medicine was principally used to cure people that were sick. This point of view, in fact, persisted until less than a generation ago, when the widespread acceptance of the germ theory of disease, and new knowledge about specific germs, caused some men to turn to prevention. This prevention of disease, individually through vaccination and the like, and in the mass, through purification of water and food supplies, is one of the newest of moves in the eternal battle against contagion. But it is by no means complete. We can head off typhoid by chlorination of water. We can escape milk-borne tuberculosis and other diseases by pasteurization. We can control malaria and yellow fever by controlling

insect pests. But the greatest killers of the land still stalk us without effective barrier. They are the diseases that fly through the air, or pass from person to person through the use of common utensils. They include common colds, influenza, pneumonia, tuberculosis, infantile paralysis and a dozen others.

Recently the newspapers were full of stories about a new method of sterilization that kills bacteria in the air and on the surfaces of utensils—in short a new and effective method of controlling these last great menaces to public health. We have with us tonight one of the men responsible for the development of this new method of sterilization by ultra-violet radiation, Dr. Harvey C. Rentschler, Director of Research, Westinghouse Lamp Division. It is my pleasure to introduce Dr. Rentschler, who will not only tell us about the Rentschler-James Process of sterilization, but will give us, I hope, a visual demonstration of micro-organisms being killed before our eyes. Dr. Rentschler—

### **THE USE OF ULTRA-VIOLET FOR KILLING BACTERIA**

DR. H. C. RENTSCHLER: No doubt every one here tonight is conscious of the existence of micro-organisms so small that they can be seen only by the use of powerful microscopes. Bacteria and mold spores are such micro-organisms. Some bacteria have a useful purpose while others are directly responsible for certain ailments and diseases. In the world of 1963 people will know considerably more about these bacteria and will be able to more successfully cope with them. For my part of the program tonight I will briefly discuss the use of ultra-violet radiation for destroying bacteria. Bacteria are broadly classified under three main classes. The first slide shows the type which appear in the form of rods. This particular slide shows the anthrax bacilli which are responsible for the dreaded cattle disease known as anthrax. In this case the bacteria has been magnified about 2000 times. The second slide shows bacteria known as cocci. Here the cells consist in groups of spherical cells sometimes grouped in chains as in the streptococcus and at other times in clusters. The third slide shows another form known as a spirochete, a sort of a cork screw shaped organism. This type is responsible for such diseases as trench mouth, etc.

When certain bacteria are kept in an unfavorable environment such as too high a temperature they go into what is known as a spore form. These can often exist for long times and when again brought into a favorable environment they revert back to the vegetative or active state. The fourth slide shows the spores of tetanus, an organism responsible for lock jaw.

These bacteria under favorable conditions have the power to multiply rapidly. Each cell divides into two cells every twenty to thirty minutes. Thus offsprings form a single cell or bacterium in twenty-four hours result in a number many thousand times greater than the popula-



tion of Greater New York City. The importance of single means for fighting bacteria is at once evident.

Sunlight has long been known to have the power of killing bacteria and destroying mold spores. But it is only certain colors of the light from the sun that have this power. In fact it is ambiguous to speak of the color in the sunlight which has this bactericidal power for the eye cannot see this radiation. Scientifically we designate the different radiations not by color as is commonly the case but in terms of wave length of the light and it is the radiation of wave length shorter than the shortest that the eye can see that is known as the ultra-violet and it is only a certain part of this ultra-violet that is bactericidal. How then do we detect and measure the intensity of this bactericidal ultra-violet radiation from a light source? This is accomplished in a simple way by the use of the electric eye or photocell which responds only to the ultra-violet radiation and only to those wave lengths that are bactericidal. I have here such a photocell and a simple meter for measuring this photocell current. You will notice that this cell does not respond to the visible light nor does it respond to the light which passes through ordinary window glass.

The bactericidal ultra-violet is effectively produced only by an arc or glow discharge through certain gases or vapors. I have here (demonstration) a simple ultra-violet light source known as a "Sterilamp". This lamp produces 80 per cent of its radiation in the bactericidal region. The lamp is simple to operate, has a useful life of about six months continuous operation, produces very little heat and consumes a very low power.

By the use of this lamp and the meter I have demonstrated we have learned many factors which govern the destruction of bacteria by ultra-violet and have already been able to suggest some useful and practical applications:

1. The main object of refrigeration is to inhibit the growth of bacteria and mold for the purpose of preventing food spoilage. The low temperature does not destroy the bacteria. The combination of ultra-violet with refrigeration at once suggests itself and is already being used for better keeping of meat and other foods.

2. The common methods used for washing and cleaning of drinking glasses are ineffective in destroying all the bacteria on the glasses. Glasses properly exposed to ultra-violet may be effectively sterilized by the use of ultra-violet.

3. Ultra-violet radiation has been used to prevent mold contamination in the cooling rooms in bakeries and during the wrapping of cakes. The method has been found so effective that articles like fruit cakes have been kept from one season to the next with a negligible amount of mold spoilage.

4. The air in hospital operating rooms may be kept at such a low

bacterial contamination that the dangers from infection are materially reduced and the post operative temperature of the patient is materially lowered.

There are many other uses which no doubt suggest themselves to every one. Instead of citing other cases I will now demonstrate the action of ultra-violet on micro-organisms. For the purpose of this demonstration I will take a few drops of water taken from the edge of a pond containing decaying vegetable matter such as grass. Such water invariably contains small living organisms such as paramecia and frontonia. This small pool of water is placed under a microscope and the organisms are projected on the screen. The paramecia and frontonia are seen swimming in the water. A special shaped "Sterilamp" is now turned on over the pool and the organisms are noticeably excited and try to get away from the radiation. In a few minutes they slow down. They are injured and finally killed by the ultra-violet and made to disintegrate in the water.

This briefly demonstrates how ultra-violet radiation destroys bacteria.

MR. PENDRAY: By now it should be clear that this business of forecasting the future is complicated; the field of new things is almost endless, and it is almost impossible to select the most interesting and most significant among them. But every person in this audience probably has a mental list of things, right now, that we apparently have omitted or overlooked; television, for example, or new fabrics, or some of the astonishing new developments in chemistry, aviation and power generation and control. But most of these things have been left out for lack of time, or because they are too vague in their influence on the future, or because, like television, they have already been too much talked about.

There are some fields which, by their very spectacularity, are bound to arrest our attention, however. One of them is certainly nuclear physics, or as the papers often call it, "atom-smashing". Atoms have been studied for a number of years in various university and endowed research laboratories. Within the last few months at least one large industrial company has taken up the study, with all the resources that such a large institution can command. We are fortunate to have with us tonight one of the men who will direct that research, Dr. E. U. Condon, recently of Princeton University, and now Associate Director of Research of the Westinghouse Electric and Manufacturing Company. Dr. Condon, who is co-author of the Franck-Condon Principle of Molecular Spectra, is an internationally-known authority in atomic physics. He has consented to tell us briefly what this atom-smashing is all about, and to describe at least one of the modern machines that do it. Dr. Condon—



## DR. CONDON AND ATOM SMASHER

DR. E. U. CONDON: Nuclear physics is the chief field of interest to physicists today and is certain to dominate their research interests in the next twenty-five years.

The science of chemistry as we know it stems directly from the attempts made in medieval times to transmute base metals into gold. Though that goal was not attained the efforts gave man an incomparably more valuable result—namely the chemistry of today. Chemistry teaches us that all matter is made up of mixtures and compounds of some ninety different elements. A pure material containing but one element consists of a very large number of atoms, the properties of which are responsible for the properties of the bulk material. These ninety different elements are not simply ninety different unrelated things. There are so many similarities between various of them that one cannot help feeling that they are all built on a similar pattern out of simpler units.

The task of unravelling the main facts of the structure of atoms has been performed jointly by physicists and chemists with great success since the beginning of this century. We now know that all the facts of these sciences are in accord with the idea that an atom consists of a central nucleus, which contains most of the mass of the atom and which has a positive electric charge, surrounded by a cloud of electrons. These latter are little particles of negative electric charge having an extremely small mass compared to that of the nucleus. In each kind of atom there are enough electrons to neutralize the positive charge of the nucleus, for under ordinary circumstances an atom is electrically neutral. A substance derives its chemical character from the number of electrons in each of its atoms, and chemical compounds are formed through the interaction of the clouds of electrons belonging to the individual atoms in the compound. The ninety different elements are thus characterized chemically by telling the number of electrons contained in the negative charge clouds in the atoms of which they are made.

Further study has revealed that all the atoms of a particular kind do not have the same weight. It is conventional to express the relative weights of different kinds of atoms on a scale which puts the weight of the common kind of oxygen equal to 16. Then it is found that the weights of all the other kinds of atoms are almost exactly integral numbers. Many of the elements are found to consist of several kinds of atoms—alike in regard to the number of electrons they contain—but differing in the weight of the central nucleus. Thus hydrogen is mostly of a kind having atomic weight 1 but Prof. Urey discovered a number of years ago that there is a rare variety, or isotope, of weight 2. Lithium consists of some atoms of mass 6, others of mass 7. Some elements involve many different isotopes. For example all mercury

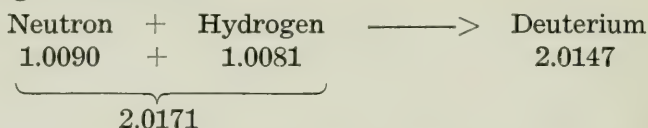
atoms contain 80 electrons in their outer cloud but these are isotopes having weights of 196, 197, 198, 199, 200, 201, 202, 203, and 204.

For the elements of low atomic weight the weights are roughly twice as great as the charge. This is illustrated in the diagram where on the horizontal scale the atom's charge number is plotted, and the difference, weight minus charge, is plotted on the vertical scale. When exhibited in this way we naturally inquire: Why is it that just these kinds of nuclei occur in nature? Why not, for example, a hydrogen atom of weight 10? In general the regularity of construction of this diagram suggests that the different atomic nuclei are built out of smaller particles according to rules as yet largely unknown. The subject of nuclear physics is concerned with these most fundamental problems of the ultimate nature of matter.

In 1932 it was discovered that when beryllium is exposed to the radiations from radium, the beryllium is caused to emit a new kind of radiation hitherto unknown. Numerous experiments performed with the new radiation show that it consists of a stream of particles like hydrogen atoms in weight but without any electric charge. These are called neutrons. Since their discovery a vast amount of experimental work has been done in investigating their relation to the structure of matter. It now appears that a good account of all the facts can be based on the hypothesis that all nuclei consist of protons, which are the nuclei of ordinary hydrogen, and neutrons. These stick together through strong forces of attraction of a new kind—not gravitational and not electromagnetic—which we shall simply call nuclear forces. Completely unknown five years ago these forces are now becoming quite familiar through the recent experiments of many workers in nuclear physics.

An interesting thing about nuclear energies is that they are so great as to affect the masses of the atoms involved. Einstein recognized from theory in 1905 that energy and mass are alternative forms of the same thing. According to this view the weight of the product of combustion of a fuel should be less than that of the original fuel and the oxygen used—less by the weight of the heat energy liberated. This is flatly in contradiction to the usually stated law of conservation of mass in the chemistry textbooks. The explanation is that in the best fuels known the fractional change in mass is only about one part in a billion which is too small an effect to be observable even in the most accurate experiments. The comparative smallness of the energy amounts involved arises from the fact that they arise from the rearrangement of the electrons on the outside of the atoms where the forces are relatively weak. Close to the nucleus much stronger forces come into play so larger amounts of energy are involved. In nuclear physics the amounts are so great that they correspond to quite perceptible changes in mass.

For example neutrons can combine with light hydrogen to make heavy hydrogen (deuterium).



We note that the mass of the produced deuterium atom is less by 0.0024 or 1.2 parts in a thousand than the total mass of the particles that went to make it up. This loss of mass corresponds to a release of atomic energy. It means that if we could "burn" hydrogen with neutrons to form heavy hydrogen instead of burning it with oxygen to form water vapor we would get approximately one million times the energy out of the fuel than we do now. This cannot be done by any known means because of the lack of an appropriate source of neutrons.

There are many examples of atomic transmutations of which energy is released but as yet there is no method known by means of which the change can be made to occur without expending much more energy than is liberated. The potential release of atomic energy is a fact but no one knows how to do it on a large scale. It is as if we knew that coal would make a good fuel if burned but no one knew how to start a fire!

The reason it is so difficult to make nuclear transmutations occur is that the two nuclei which are to react repel each other very strongly since both are charged with positive electricity and like electric charges repel each other. This tends to prevent the nuclei from coming close enough to each other to allow a rearrangement of their constituent particles to occur. This tendency can be overcome if the nuclei can be first speeded up artificially to great speeds and caused to collide with each other. Then those which have a head-on collision will come close enough together for something to happen.

That is the reason back of the present concentration of physicists on the construction of apparatus designed to accelerate atoms to great speeds. Apparatus appropriate to this purpose is of several types, the two types most suitable for speeding up atoms are the cyclotron developed by Prof. Ernest O. Lawrence of the University of California and the belt-type electrostatic generator which was developed by Prof. R. I. Van de Graaff of the Massachusetts Institute of Technology. As time is short I will only describe the latter type and in particular will describe the large instrument of this kind which is rapidly nearing completion at the Westinghouse Research Laboratories in East Pittsburgh. This instrument, designed and constructed under the supervision of my colleague, Dr. W. H. Wells, is the largest of its kind and will make possible considerable extensions of our knowledge of this newest branch of science.

Earlier in these remarks I raised the question concerning the rea-



son why only certain atomic weights are found associated with each kind of chemical atom in nature. We know now that the reason for this is that the other kinds are unstable. Many of the kinds of atoms for which places are provided in the diagram have been artificially prepared in the laboratory. When so prepared they are found to be radio-active, that is, they spontaneously disintegrate emitting high speed electrons after the fashion of the natural radio-active elements of which radium is the best known example. In this way it has become possible to prepare forms of most of the chemical elements which spontaneously break up, reverting in the process to stable forms. It is probable so far as anyone can see now that the most valuable application of this work will result from the preparation of these man-made substitutes for radium. These substances will undoubtedly find medical application giving to the existing science of radiology a wider scope than ever before. They also make possible many chemical researches in the chemistry of life such as are not possible with existing means and which will, in the years to come, give us a deeper insight into the workings of our bodies and hence broader possibilities for elimination of disease than are now available.

MR. PENDRAY: And now—last but not least—we should simply be missing the best part of our story if we didn't make some attempt to explore the future of transportation. In order to be certain of my facts, I consulted several authorities on transportation and these paragraphs are a composite of their forecasts:

### AIR TRAVEL

Air travel, of course, will be greatly improved and made much faster and more comfortable than at present. There is no question that the problem of "going straightup" and "coming straight down" will be solved, thus enabling airplanes to land on tops of buildings in the center of cities. The atmosphere inside the airplanes will be kept at atmospheric pressure and will be air-conditioned so that there will be no discomfort in flying at any altitude.

### HIGHWAY CONSTRUCTION

Super-express highways will be with us and, while these will be toll highways at first, they will probably, eventually, be free. These will eliminate grade crossings and will enable automobile and truck traffic to operate at twice present speeds. Some sort of radio control may come which will automatically slow traffic down when it approaches locations where this is necessary, thus taking the control away from the drivers—and eliminating the possibility of human error.

### FREIGHT TRAFFIC

The freight traffic on these super-express highways will be, possibly, handled by trains of trailers and with a power plant on the truck



and motorized axles on the trailers, thus getting the tractive power to climb hills at high speeds.

## RAIL TRANSPORTATION

There will be continuous improvement in rail transportation, leading to higher speeds and greater comfort than at present. It may be that the greatest handicap to railroad electrification will be solved; that is, the necessity for an overhead distribution system to transmit the power to the trains. Radio transmission of power would simplify and cheapen railroad electrification so that it would be greatly extended.

And now I am going to tell you about a development with which you may not be so familiar. I refer to the world-wide interest in research in rockets—not as a means of going to the moon, but as a method of reaching extreme altitudes for weather forecasting and scientific investigation, as a possible means of carrying mail and express over great distances with extreme rapidity, and possibly—ultimately—of carrying men over long distances, too, at almost the speed of the telegraph.

It happens that, whereas most of the other things I have been telling you about tonight have come to me only as they might come to any scientific reporter, this is a field in which I have some first-hand information. Back in 1930 I was one of a group of men interested in science and engineering who formed the American Rocket Society. This society now has more than 300 members, including virtually every important experimenter in rockets all over the earth. It has headquarters here in New York, a proving field for ground tests and rocket shots, an experimental program through which it coordinates some of the work of its individual members, and a quarterly technical publication, "Astronautics," devoted to the engineering development of rockets.

For the most part you have heard little about the activities of this group, and what you have heard has got out more or less accidentally, because a rocket experimenter soon learns that the worst possible disaster, next to an injurious explosion, is publicity. It seems that no newspaper man can be convinced that all rockets are not aimed at the moon.

I remember one occasion when, yielding to the requests of our newspaper friends, we weakened and invited reporters and cameramen to witness a shot at our rocket field near Great Kills, Staten Island. We had prepared a fine, seven-foot rocket, and when the newsmen arrived it was already in its launching rack, ready to be fired. To the grinding of sound cameras we explained that this was only an experimental rocket, which might possibly rise to an altitude of a mile; that it was certainly not intended for the moon, and that we did not, as a matter of fact, know exactly what it would do—hence the experiment.

Well, that story had to be told at least half-a-dozen times, to various reporters, cameramen and movie men. At length, after several hours of this preliminary business, we satisfied all comers, loaded up the rock-

et, and crouched in our launching dugout, waiting the signal to fire. The minutes went past—one—two—three—four. The timer shouted FIRE! And the rocket, through some temporary fault, only went Fizzzz . . . , refusing even to leave its stand.

Well, you may imagine our embarrassment. But the payoff came next morning, when we found in the papers, despite our careful explanations, such headlines as this:

## ROCKET TO THE MOON

### FAILS TO LEAVE EARTH

Now, why are we interested in going through all this? What is extraordinary about a rocket that should make it worth the bother?

The rocket has three interesting characteristics that set it apart from all other engines that transmute chemical into mechanical energy:

1. There are no moving parts—hence the theoretical efficiency can be very high—perhaps as high as 85 per cent.
2. The rocket can go very fast—in fact it must go fast. And the best speeds will probably be of the order of 2 miles a second.
3. The rocket needs nothing to push against—it is actually more efficient in a vacuum.

Now to make these things clear, we need to see how a rocket works. I shall draw on the blackboard an outline of a rocket motor, and explain the principles of this mechanism. (Blackboard demonstration).

Now as to those terrific rocket speeds you have heard about; it is obvious that the greatest efficiency will come when the rocket is moving forward at about the speed of the escaping gases—when, in effect, the gas molecules are standing still and all the speed is transmitted to the rocket. These speeds are of the order of a mile a second with liquid oxygen and gasoline, the fuels most modern experimenters use, and so it is not inconceivable, if rockets can be made to do the job at all, that we shall have shots from New York to Paris in less than an hour.

Naturally, you wonder whether passengers can ever withstand such tremendous velocity. It is important to remember that speed alone is not injurious. At this moment we are traveling through space at the rate of 19 miles a second in the earth's orbit, yet none of us feels it. What is dangerous is change from one speed to another—deceleration and acceleration. In a rocket these can be rather gradual. The rocket starts at zero speed, and builds up velocity as it goes. Its flight is accelerated, as the fall of a stone toward the earth is accelerated. In fact, the acceleration is measured in terms of the acceleration of gravity. In a Paris rocket, our mathematicians tell us, we will need acceleration of only about three times that of gravity, and that need be applied only for two or three minutes, to build up enough speed to carry us across the ocean, in a tremendous trajectory that may reach, at one point, 500 miles above the surface of the earth.

But how, you will now want to know, is such a rocket to be controlled in flight, and how brought safely to land? Well, believe it or not, at least a dozen schemes that sound feasible have been devised, though of course nobody has yet shot a long-distance rocket, so we can't say how any of them will work. However, one of the most interesting, and in some ways the simplest, has been proposed by Dr. H. H. Sheldon of New York University. You might be interested in hearing about it.

Dr. Sheldon has proposed that four photocells be placed in the nose of the rocket, separated by partitions, and wired on a balanced circuit such that when light falls on all four, the circuit remains in balance. But when, due to faulty aim in the rocket, light falls on the cells unevenly, the circuit becomes unbalanced, permitting servo-mechanisms to go into action that will correct the aim.

Now, the proposal is that shots take place when a certain bright star is just rising above the eastern horizon. The photocells, which by that time will probably be much more selective than now, will be sensitive only to the beams of that star. As the rocket rises, clockwork throws in the circuit, and during the long body of the flight the rocket is guided with true astronomical accuracy to a point near our destination, which we will say is Paris.

As it begins to fall into the atmosphere, a second clockwork cuts in another circuit, connected with balanced photocells sensitive only to the beams of a searchlight, which is slowly sweeping the skies from the rocketport. As this beam touches the rocket, the new cells are thrown into action, parachute and stub wings are put forth to break the speed, and the rocket swims down the fan-wise searchlight beam and, its velocity brough down to something within reason, falls into a net. Whether it will work or not, it will be an interesting experiment.

Tonight we have brought some things to show you that denote the progress of rocket research. Our first serious problem was the motor, which we wanted to harness to liquid fuels. These fuels—liquid oxygen and gasoline or alcohol, are about five times as powerful as TNT, therefore the job required quite a bit of harnessing. Our first small motors—as the combustion chamber and nozzle are called—were pretty crude, rule-of-thumb affairs, of low efficiency—yet they worked. Our first one is here—a real museum piece. This motor weighed about a pound, yet gave a thrust of more than sixty pounds. It had no cooling mechanism, but was fired three times without burning out. Finally we sawed it apart to see what had happened to its insides.

This second motor originally had four nozzles. One of them burned out in flight, and another was sawed out to study the flame effect. This, too, is an historic motor. It was the first motor to drive a rocket at the speed of sound. That shot was made on Staten Island in 1934, and the designer of the rocket, now director of the experimental committee of



the American Rocket Society was John Shesta, a young engineer, and one of the leaders of the rocket experimenters in this country.

Here I have a third motor, and one of the most up-to-date. It is the type known among rocketors as a single nozzle regenerative tubular motor. The idea is that it cools itself—the incoming fuel takes the heat out of the metal of the nozzle, then carries that heat back into the motor, so that none is lost. This particular model is scheduled for exhaustive testing on the Society's proving stand this spring; it is expected to establish a new high in efficiency and long life, and may be the motor that will make rockets practical for high altitude meteorological and scientific work. Its designer is Mr. James Wyld. This young mechanical engineer is a member of the Society's experimental committee. He calculates that this motor, which weighs about two pounds, should generate about 370 horsepower.

We also have an experimental rocket, complete and ready to fire. This is only one of many designs which are being tested, and it is to be confessed that this one isn't the best. By the time we had finished it, other experiments showed that it would not fly very true, and had other technical objections. Had it been better, it would have been tested to destruction. As it is, we keep it around, affectionately, as a sort of showpiece.

And finally, Mr. Shesta and Mr. Wyld have been at work the last few days on an extra special treat—a rocket that works without fire. It is, of course, only a stunt, intended to illustrate the power there is in the rocket idea. It is probably the world's first house-broken rocket.

And now, we have tried to tell you all we know about the future. If that future seems more ominous than pleasant, as it will to some—at least you can't say that Westinghouse didn't warn you. If, on the other hand, you look forward to it with pleasure, as we do, we hope that you have health and prosperity and the finest kind of experiences in the next twenty-five years—and finally, that every one of us may gather again in this auditorium on the night of March 18, 1963, to consider what the world may be like by the end of the year 1988. Thank you.

PRESIDENT: I do not know whether I will go home tonight bug-house or not, because we have heard so much discussion about bugs. However, it has been very entertaining and I suppose you are open to questions now. Is there anything that any of you gentlemen would like to ask?

PROF. LOUIS E. ENDSLEY: I do not want to ask any questions but would like to say that I think we have all enjoyed this very popular talk. It has been very well put in common language so that we could understand it.

I move you, Mr. President, that a rising vote of thanks be extended to the Westinghouse Company and to each of these four gentle-



men who have been giving their lives to this scientific research and have come here to give us a demonstration and an idea of the future benefits a man may have.

(The motion was seconded and a rising vote of thanks was extended to the Westinghouse Company and the four speakers from that company.)

PRESIDENT: If there is no other business, the meeting stands adjourned.

J. D. CONWAY, Secretary.

## **In Memoriam**

**WILLIAM J. KNOX**

**Joined Club February 24, 1905**

**Died May 26, 1938**

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# NOTICE

**MR. SAMUEL O. DUNN,**

**Editor, Railway Age,**

is to be the speaker before a meeting  
of the Engineers Society of  
Western Pennsylvania on

**Wednesday Evening,**

**at 8:00 O'Clock P. M.**

**February 15, 1939**

**in the Urban Room, William Penn Hotel,**

**Pittsburgh, Pa.**

The subject of Mr. Dunn's  
address will be:

**"Transportation"**

It is hoped members of The Railway  
Club of Pittsburgh may be well  
represented at this meeting.

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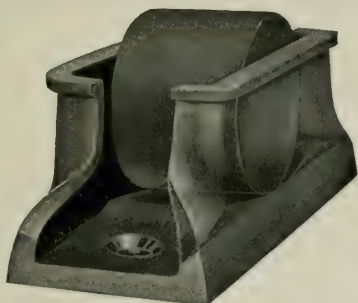
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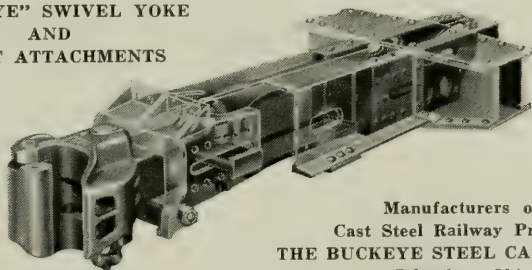


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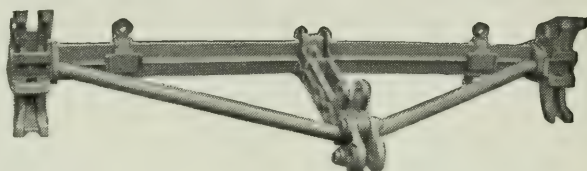
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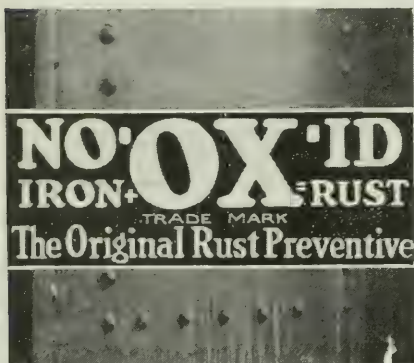
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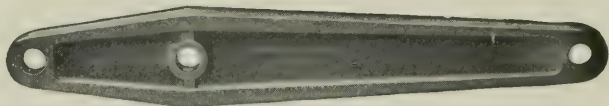
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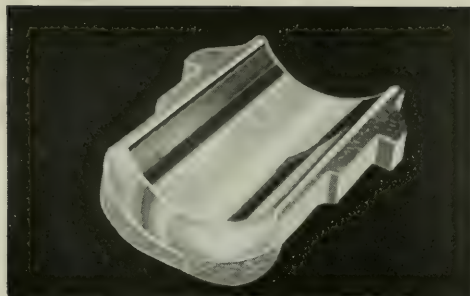
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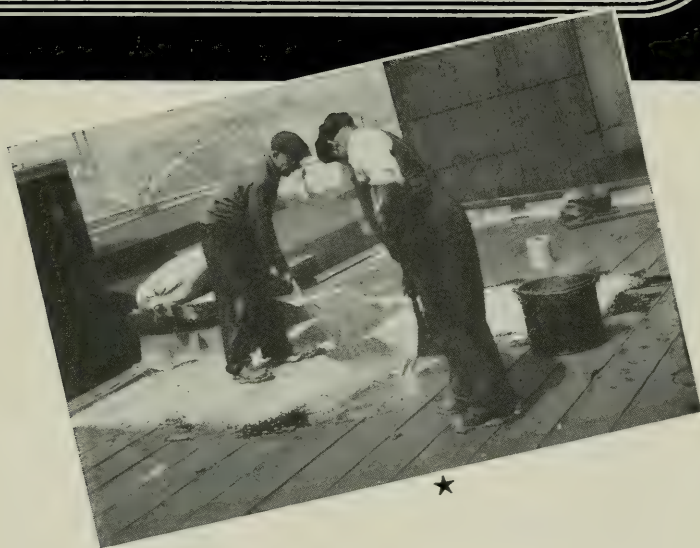
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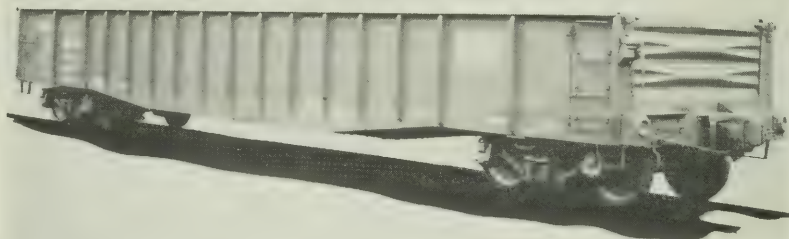
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## OF

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Organized October 18, 1901

Vol. XXXVIII  
No. 2

**Pittsburgh, Pa., Dec. 15, 1938.**

\$1.00 Per Year  
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|                  |                                  |
|------------------|----------------------------------|
| *J. H. McCONNELL | October, 1901, to October, 1903  |
| *L. H. TURNER    | November, 1903, to October, 1905 |
| *F. H. STARK     | November, 1905, to October, 1907 |
| *H. W. WATTS     | November, 1907, to April, 1908   |
| *D. J. REDDING   | November, 1908, to October, 1910 |
| *F. R. McFEATERS | November, 1910, to October, 1912 |
| *A. G. MITCHELL  | November, 1912, to October, 1914 |
| *F. M. McNULTY   | November, 1914, to October, 1916 |
| *J. G. CODE      | November, 1916, to October, 1917 |
| *D. M. HOWE      | November, 1917, to October, 1918 |
| *J. A. SPIELMAN  | November, 1918, to October, 1919 |
| H. H. MAXFIELD   | November, 1919, to October, 1920 |
| FRANK J. LANAHA  | November, 1920, to October, 1921 |
| *SAMUEL LYNN     | November, 1921, to October, 1922 |
| *D. F. CRAWFORD  | November, 1922, to October, 1923 |
| *GEO. D. OGDEN   | November, 1923, to October, 1924 |
| A. STUCKI        | November, 1924, to October, 1925 |
| *F. G. MINNICK   | November, 1925, to October, 1926 |
| G. W. WILDIN     | November, 1926, to October, 1927 |
| E. J. DEVANS     | November, 1927, to October, 1928 |
| W. S. McABEE     | November, 1928, to October, 1929 |
| E. W. SMITH      | November, 1929, to October, 1930 |
| LOUIS E. ENDSLEY | November, 1930, to October, 1931 |
| *JOHN E. HUGHES  | November, 1931, to October, 1932 |
| F. I. SNYDER     | November, 1932, to October, 1933 |
| C. O. DAMBACH    | November, 1933, to October, 1934 |
| R. H. FLINN      | November, 1934, to October, 1935 |
| R. P. FORSBERG   | November, 1935, to October, 1936 |
| E. A. RAUSCHART  | November, 1936, to October, 1937 |
| G. M. SIXSMITH   | November, 1937, to October, 1938 |

\*—Deceased.

Meetings held fourth Thursday of each month except June, July and August.

# PROCEEDINGS OF MEETING

DECEMBER 15, 1938

The meeting was called to order at the Fort Pitt Hotel at 8:00 o'clock P. M., with President J. D. Beltz in the Chair.

Registered attendance, 188 as follows:

## MEMBERS

Adams, Frank W.  
Ambrose, W. F.  
Anderson, J. P.  
Angel, A. J.  
Ansman, J. M.  
Bagaley, W. W.  
Balla, J. A.  
Balph, M. Z.  
Balzer, C. E.  
Barr, H. C.  
Bauer, L. M.  
Baumann, E. G.  
Beltz, J. D.  
Bender, H. P.  
Binau, R. J.  
Britt, T. E.  
Brown, Ralph W.  
Bucher, Fred J.  
Buffington, W. P.  
Burel, W. C.  
Buzzerd, J. P.  
Callahan, D. E.  
Campbell, F. R.  
Carey, C. D.  
Carmody, J. J.  
Christy, F. X.  
Cipro, Thomas  
Clausen, Harold  
Code, C. J.  
Conway, J. D.  
Coombe, A. B.  
Courtney, H.  
Dambach, C. O.  
Davis, Charles S.  
Dawson, P. R.  
Deike, George, Jr.  
Doscher, Fred H., Jr.  
Durell, W. A.  
Eberhart, James A.  
Emery, E.  
Endsley, Prof. Louis E.  
Fair, J. M.  
Farlow, G. B.

Faustman, Paul L.  
Foard, E. A.  
Fralic, C. F.  
Geiser, W. P.  
Gelston, George A.  
Glaser, C. J.  
Glenn, J. H.  
Goda, P. H.  
Golden, A. B.  
Goldstrom, G. E.  
Goodwin, A. E.  
Greek, Joseph  
Haller, Nelson M.  
Hansen, William C.  
Harman, H. H.  
Hayward, C.  
Heed, H. L.  
Heer, Walter  
Hengst, Guy E.  
Hepburn, P. W.  
Hester, H. N.  
Hicks, E. S., Jr.  
Hilgert, T. J.  
Hilstrom, A. V.  
Hoopes, R. E.  
Hunt, Lawrence  
Johnson, J. W.  
Kearfott, W. E.  
Kentlein, John  
Kirby, D. D.  
Koenig, W. A.  
Kroen, Vicent  
Lanahan, Frank J.  
Larson, W. E.  
Lewis, Benjamin  
Little, S. G.  
Long, R. M.  
Lortz, E. A.  
Marsh, Ernest  
Millar, C. W.  
Miller, J.  
Miller, L. P.  
Misner, George W.

Moir, W. B.  
 Monk, J. Thomas  
 Morgan, Homer C.  
 Morrison, R. A. J.  
 McFetridge, W. S.  
 McKinley, A. J.  
 McKinley, John T.  
 Norris, J. L.  
 North, D. P.  
 Orbin, Joseph N.  
 Overholt, B. C.  
 Pickard, S. B.  
 Posteraro, S. F.  
 Reinhardt, A. L.  
 Reiser, Frank  
 Roberts, E. L.  
 Robertson, A. S.  
 Robinson, L. L.  
 Rudisill, D. E.  
 Rumbarger, F. A.  
 Rupp, E. S.  
 Rushneck, G. L.  
 Ryan, D. W.  
 Schako, E. J.  
 Schadt, A. D.  
 Schiller, John  
 Schrecongost, C. P.  
 Searles, E. J.  
 Sheffer, R. W.

Shellenbarger, H. M.  
 Sheridan, T. F.  
 Showalter, Joseph  
 Smith, G. M.  
 Spalding, L.  
 Stack, John E.  
 Steigerwalt, R. W.  
 Stevenson, H. G.  
 Stocker, H. F.  
 Sutherland, Lloyd  
 Sutton, K. B.  
 Swenk, Raymond  
 Terkelson, Bernhard  
 Teskey, Dr. Walter J.  
 Thomas, J. V.  
 Thompson, Harry T.  
 Thornton, A. W.  
 Tipton, G. M.  
 Tracey, J. B. A.  
 Tryon, Ira D.  
 Utzler, Elmer S.  
 West, Troy  
 Wheeler, C. M.  
 Wickerham, F. A.  
 Wikander, O. R.  
 Wilson, J. M.  
 Wilson, James R.  
 Wilson, W. H.  
 Woodward, R.

Yohe, J. K., Jr.

## VISITORS

Bagaley, Robert F.  
 Bernhard, G. T.  
 Callahan, R. L.  
 Claypoole, R. W.  
 Conrad, R. J.  
 Cramer, F. F.  
 Cressler, A. B.  
 Crossland, P.  
 Dankmyer, F. C.  
 Davis, William B.  
 Devlin, J. C.  
 Dufour, C. C.  
 Epker, F. J.  
 Geist, Eugene  
 Glaser, Edward  
 Hahn, H. A.  
 Hemma, Charles H.  
 Johnson, Carl  
 Johnson, P.  
 Joyce, S. F.  
 Lehr, William E.

Lewis, S. B.  
 Livingston, E. M.  
 Lobdell, Ben H.  
 Loos, C. W.  
 Masengill, James  
 McCrea, William H.  
 McKeever, Robert C.  
 Niclout, Maurice  
 Radtke, J. E.  
 Reichenbach, A. T.  
 Reynolds, D. E.  
 Stevenson, W. M.  
 Thomas, M. F.  
 Urban, C. E.  
 Van Wormer, G. M.  
 Vaughn, R. W.  
 Walther, George  
 Waple, C.  
 Wilson, George F.  
 Wilson, James T.  
 Wilson, L. C.

Zearley, J. P.



PRESIDENT. Gentlemen, now we will come to order. As usual we will dispense with roll call and the reading of the minutes of the last meeting which should be in the mail by now. I am sorry we do not have a very large crowd here tonight, but believe we are doing pretty well in view of what is going on in Pittsburgh today. There are a lot of people who have gone out to the Irvin Mills and, of course, a large number of them are Railroad men. Then, too, this is a bad month. We hope that after the next meeting we will have a larger attendance.

Does the Secretary have any applications?

SECRETARY: Mr. President and gentlemen, we have the following proposals:

Dejke, George H., Jr., Mining Engineer, Mine Safety Appliance Company, 522 Roslyn Place, Pittsburgh, Pa. Recommended by Carlton Hayward.

Hester, H. N., District Manager, Hollup Corporation, 2538 Smallman Street, Pittsburgh, Pa. Recommended by D. D. Kirby.

Holley, R. W., Gang Foreman, Pennsylvania Railroad, 922 Franklin Avenue, Wilksburg, Pa. Recommended by G. N. Kennedy.

Kennedy, M., Division Transportation Sales Manager, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. Recommended by G. W. Honsberger.

Little, S. Guy, Sales Engineer, Penn Machine Company, 493 Union Trust Building, Pittsburgh, Pa. Recommended by H. G. Stevenson.

McMullin, Harry R., Legal Department, Carnegie-Illinois Steel Corporation, 60 Marlin Drive East, Mt. Lebanon, Pittsburgh, Pa. Recommended by Roger Sarchet.

McPherson, K. W., Equipment Engineer, Pittsburgh Railways Company, 517 Grove Road, South Hills Station, Pittsburgh, Pa. Recommended by G. W. Honsberger.

Ross, H. A., Assistant to President, P. & W. Va. Ry. Co., Wabash Building, Pittsburgh, Pa. Recommended by C. O. Dambach.

Zimmerly, Albert, Gang Foreman, Pennsylvania Railroad, 3820 Wealth Street, North Side, Pittsburgh, Pa. Recommended by G. N. Kennedy.

PRESIDENT: After these names have been submitted to the proper committee, they will become members. Is there anything else, Mr. Secretary?

SECRETARY: Mr. President, we have had information of the death of one of our members, C. M. Hackett, Division Boiler Maker Foreman, Pennsylvania Railroad, Oakmont, Pa., died November 2, 1938.

PRESIDENT: A suitable memorial minute will appear in the next issue of the Proceedings.

Now, gentlemen, we will call Mr. Carl W. Loos, Eastern Sales Representative, Sperry Products, Inc., Hoboken, N. J., who will speak to you on the subject of "Flash Butt Welding of Rails". It is my pleasure to introduce to you at this time, Mr. Loos.

## FLASH BUTT WELDING OF RAILS

By C. W. LOOS, Eastern Sales Representative, Sperry Products, Inc., Hoboken, N. J.

Mr. President and Members of the Railway Club of Pittsburgh: In commencing my discussion of Flash Butt Welding of Rails, it is perhaps well to review a little bit of what welding has done in the past:

## 1) HISTORY

In commencing my discussion of Flash Butt Welding of Rails it is perhaps well to review the development of butt welded rail. Naturally the reason for the desire to weld rails end to end was to eliminate the joint which is normally the weakest spot in the track structure and the place which involves the greatest amount of routine maintenance. Thus, the first attempts at welding were usually for installations in tunnels, where joint maintenance is difficult and where long rails are not subjected to as great temperature ranges as found in open track. Such installations were made both in this country and abroad as early as 30 years ago and more recently installations were made in open track, particularly on the Delaware & Hudson, and on the Bessemer & Lake Erie. Many foreign railways have also done considerable rail butt welding, but this has been confined mostly to installing longer lengths of rail varying from two to eight standard rails in length.

Up until 1930, this welding was done either by electric arc, oxy-acetylene or the Thermit methods. Although Flash Butt Welding has been in use in industry for quite a long period of time it was not applied to welding rails until 1930, when a machine was developed in Germany especially for this purpose. At the end of 1934, the Belgian State Railways installed a machine. Since then Flash Butt Welding of Rails has been very widely adopted throughout the world and at the present time there are machines for Flash Butt Welding of Rails in Germany, Belgium, France, Poland, Sweden, England, Australia, South Africa, the Argentine, and Netherland Indies, plus the one that Sperry has developed in this country, a total of approximately twenty machines existing at this date. In addition, we are now building a machine in our shops which will be used by the Paulista Railway of Brazil for welding their rails into longer lengths.

The process of flash welding is accomplished by utilizing the heat produced when an electric arc is established between the two rail ends. This arcing heats the two end faces very rapidly to a plastic state. At a predetermined time, the two ends are pressed together with a force of nearly ninety tons, applied almost instantaneously. This rapid forceful pushup throws the plastic metal and forges the two rails into one unit. Advantages of this system of welding are that the arcing burns off rust and produces gases between the two faces preventing oxidation during the welding. The rapid heating concentrates the heated area in a very short distance from the end of the rail. The plastic zone is less than one-half inch from the rail faces, thus permitting the high pushup pressure essential for a good weld without deforming the rail. The plastic metal is completely extruded by the pushup, thus welding clean, sound metal together. The entire process requires less than two minutes.

We became interested in welding in 1934, at which time the only existing machine for flash welding rail was in Germany. But, through

the co-operation of General Electric Company, we succeeded in obtaining some flash welds and making extensive tests on them, as well as with other existing types of welds. The results obtained from the flash welds were so good that we determined to build a flash welding machine adapted to the heavy sections, and the high carbon rail steel used in this country. This machine was completed early in 1937 and before describing it, I would like to mention some of the exhaustive research that we carried on in order to develop a weld as nearly equivalent to unwelded rail as possible.

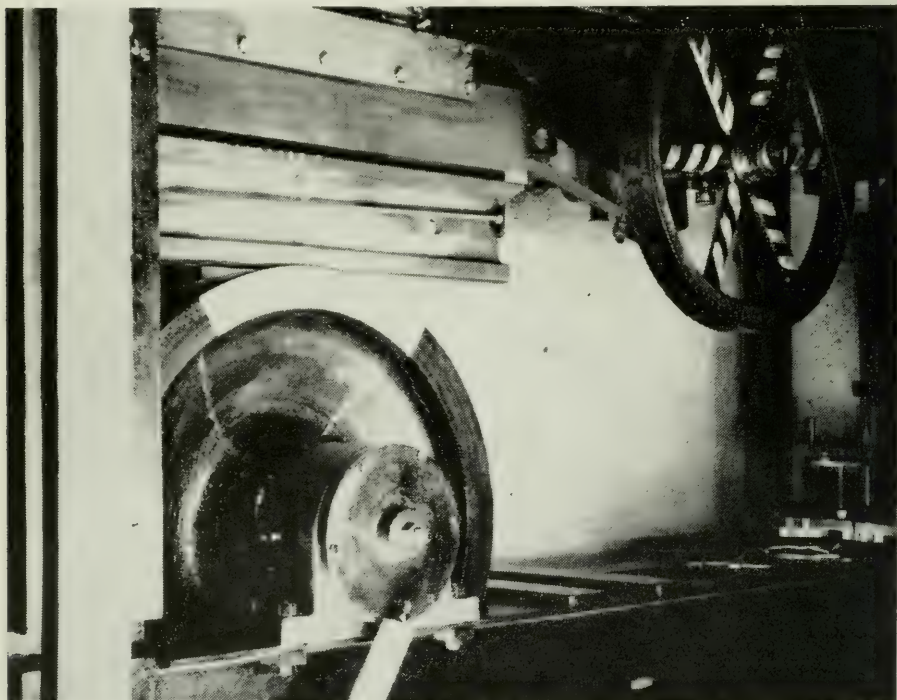
## 2) SPERRY RESEARCH

Our program of research included Impact and Tension tests of specimens, and Hardness, Fatigue and Drop Tests on full size sections, as related to the different procedures which might be used in producing flash welds. This not only involved the actual welding process itself but subsequent heat treatment. Of major importance were the fatigue tests carried out on a rolling load machine, shown on the first slide.

### a) The Rolling Load Fatigue Test Machine (Slide 6)

This machine was developed by Professor H. F. Moore of the University of Illinois for the purpose of producing fatigue failures or transverse fissures in full-section steel rail.

The rail is mounted either as a cantilever beam or a simple beam as shown in this slide. The wheel is loaded to 65,000 lbs. by means of





the spring at the extreme left of the picture, and the rail is then moved back and forth under the wheel by means of a motor driven crank arm, at the rate of 120 complete passes per minute. Running continuously, the rail will be subjected to approximately one million cycles—or two million complete passes—in ten days.

In our effort leading to the development of an Electric Flash Butt Weld which, in terms of fatigue performance, is equal to a good rail, Sperry Research Department installed a Rolling Load Fatigue Test Machine in a sound-proof room in our Laboratory in 1935. It has been running continuously ever since, applying to full size sample welds a Car Wheel Load that is more than double the average wheel loadings in service track.

#### **b) Rolling Load Machine With Broken Rail (Slide 7)**

The weld specimen in this picture is mounted as a cantilever, the weld being located  $1\frac{1}{2}$  inches from the support. You will note that the failure occurred through the center of the weld at the head of the rail, and progressed on down into the web.

With this cantilever mounting, and a load of 65,000 lbs., shatter-cracked rails will run in from 500,000 to 1,500,000 cycles, while sound rails will run from 3,000,000 or more cycles (equivalent to 6,000,000 or more passes).

Rails placed on the Rolling Load Test are checked daily for incipient cracks by means of the drop-of-potential test. This test is made by passing heavy current through the rail and taking potential readings along the rail head through the welded section. In this way, the start of a failure is detected and its progress noted.

#### **c) Chart (Slide 3)**

This table gives the rolling load fatigue test data on flash welds, and illustrates the improvement in performance resulting from the various improvements in welding and stress-relieving technic.

The first three samples—A-2, A-3, and A-4—were placed on the rolling load machine without stress relieving. It will be noted that incipient failures started in these samples at a million passes; one broke at 1,350,000 passes; another at 1,500,000 passes; and the third at 1,700,000 passes. A long series of experiments was conducted on welding and stress relieving technic. From the welding angle, the duration of the pre-heating period, velocity of flashing, and pressure of push-up were carefully investigated. Current density during these operations also played an important part in weld quality.

It was necessary to arrive at a stress-relieving technic which would abet the speed of weld production, handling of the rail, and other practical considerations. The result of the first attempt at stress-relieving is shown in sample A-10. In this specimen, the failure started at 2,000,000 passes, and complete failure occurred at 3,600,000 passes.



Further research was necessary, and sample A-11 shows the result of the next trial: failure started at 3,000,000 passes, and complete failure occurred at 4,500,000 passes. Further intensive study was made by Sperry Research; more test samples were run to failure in the rolling load fatigue test machine until our final standard production method, meeting all tests, was arrived at.

Sample A-14 was given 6,000,000 passes at cantilever loading and 6,000,000 passes at simple beam loading; yet, at a total of 12,000,000 passes of the 65,000 lb. wheel load, there was no sign of incipient failure, so the test was abandoned. Many other samples, among them A-15, were also subjected to the same treatment and tests, and came through with no signs of incipient cracks.

Thus, Sperry Research arrived at a standard production procedure.

#### d) Tensile and Hardness Test (Slide 5)

This chart shows the comparison, in terms of tensile strength and hardness, of the weld metal with the parent metal in flash butt welded rail sections. Results of tension tests have varied considerably due to the difficulty of testing specimens taken from the weld area. However, results indicate that the strength of the weld is very close to that of unwelded rail metal.

Hardness increases slightly in the heat affected zone in the head of the rail. This zone extends about  $\frac{1}{2}$ -inch on either side of the weld line.



e) **Drop Test Samples** (Slides 8 and 9)

1) **Slide 8**—Drop Tests made under supervision of the Robert W. Hunt Company, at the Steelton plant of the Bethlehem Steel Company. Standard for this rail:

1 drop, 2,000 lb. tup, from height of 22 feet.

With the results of the research outlined above, we were able to determine a standard procedure for making a weld giving the best combination of physical properties. Some of these tests were carried out before we had our machine completed in order to aid in the design of the equipment. After the machine was completed, further tests were conducted to perfect the procedure. When we finally arrived at a standard procedure the operation of the equipment was made automatic in order to eliminate the human element in welding and to enable us to produce welds of uniform high quality. Naturally, we had our griefs during this development period, as is normal in developing any specialized machine, but, these were eventually overcome and I will not take the time to detail them now.

3) **THE SPERRY RAIL WELDER**

a) **General View of Sperry Rail Welder Units In Service**

Here we are looking down the length of train comprising the various welder units. This picture was made on the Delaware & Hudson Railroad near Schenectady, N. Y., in the fall of 1937. Pointing out the dif-





ferent units, as we look from the near view at the right of the picture to the distant units at the left of the picture, we see:

1) A Delaware & Hudson **Steam Locomotive** which supplies steam for the turbine. Note steam pipe connection between it and the Generator Car.

2) The Sperry Rail Service **Generator Car** which houses two turbo-generators that supply current for the Welding Machine and auxiliary equipment.

3) This **Box Car** (D&H) is temporarily serving as an office and happens to be in this position because this location is convenient.

4) The Sperry Rail Service **Rack Car** on which standard rails are racked in position so they are easily fed into the Welder Car where they are jointed together by Flash Butt Welding.

5) The Sperry Rail Service **Welder Car** which houses the actual Welding Machinery. The special Welding Machinery designed for the flash welding of rails was developed by Sperry in co-operation with General Electric Company.

6) A long chain of **Flat Cars**—as many as are needed depending on the length of rails being welded—are adjacent to the Welder Car, and are seen in this picture extending into the distance. On the first of these adjacent to the Welder Car, are work stations (under the canopies) where welds are finished immediately as they emerge from the Welding Machine; since all welding operations are simultaneous, a new weld is



turned out complete every six minutes. The long string of finished welded rail is then pulled, by means of a cable on the rear car, onto the flat cars (or gondola cars, as the case may be). As soon as the chain of flat cars are loaded with string of welded rail, they are detached from the Welder Cars, attached to a locomotive, and used to haul the rail from the point of welding to the point of laying (or storing, as the case may be). Thus, it is possible to do the actual welding of long rails in sidings or yards where it will not interfere with regular rail traffic.

**b) Inside the Generator Car (Slide 17)**

Electrical current for welding is produced by this turbine-driven generator, which supplies current to a low voltage transformer. The turbine is supplied by steam from a locomotive.

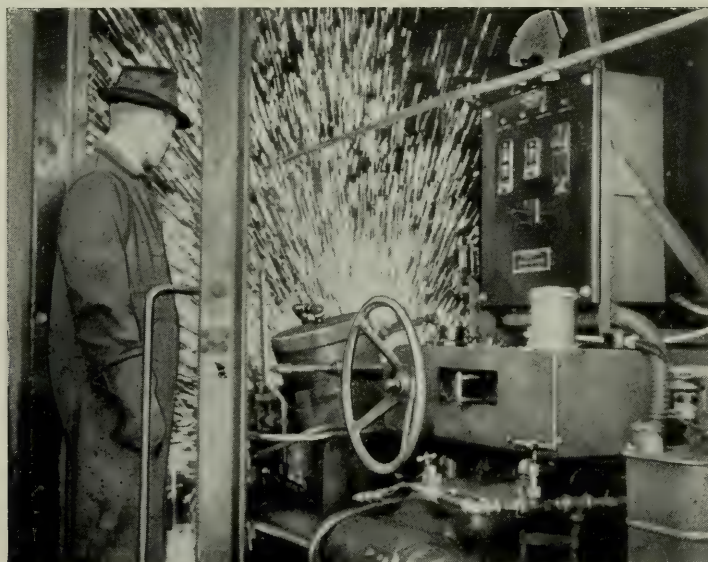
An auxiliary turbine-driven generator (the smaller one seen in this picture) provides power for hydraulic control, ventilating motors, lights, power rollers, and other auxiliary equipment.

**c) Inside the Rack Car (Slide 18)**

By means of the crane noticeable in the upper right, standard 39 foot rails have been racked in position on the rack car, so they can easily be fed into the welder car. Note the power rollers by means of which the rail on them will be moved into the welder car (SRS 271); the end of a rail moved into the welder car can be seen through the door leading into the Welder Car. Before entering the Welder Car, the rail ends are cleaned by an air-driven surface grinder.

**d) Inside the Welder Car (Slide 19)**

The actual welding machine with rail, held in position by hydraulic clamps, in welding position. In this view, the rail is seen emerging from the Welding Machine.

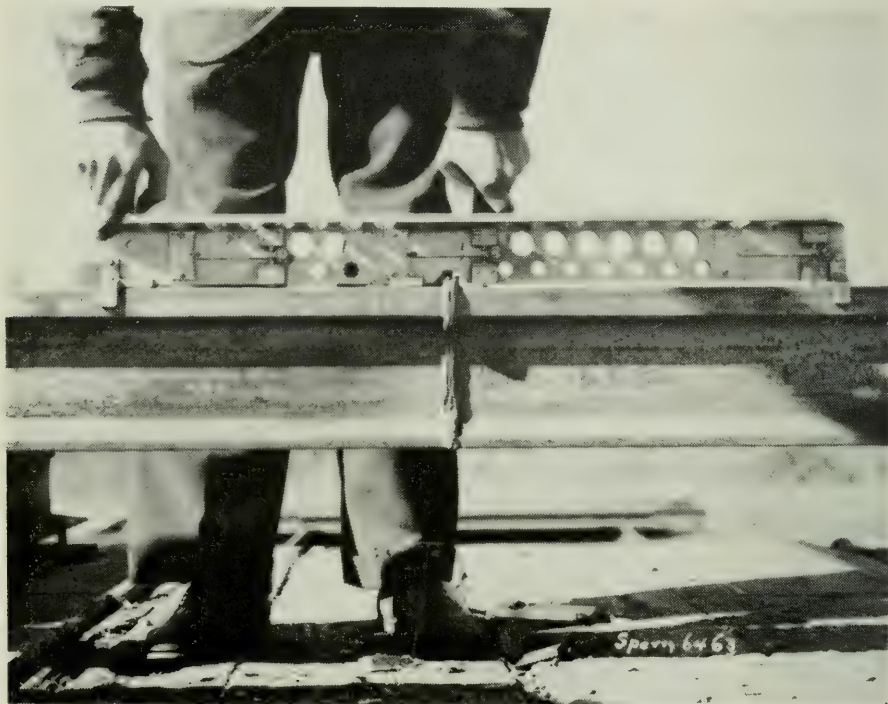




**e) Rail Alignment Gauge (Slide 20)**

When the rail emerges from the Welder, it is given a careful visual inspection, and is checked for alignment. Correct alignment of the rails at the weld is of major importance.

With this Rail Alignment Gauge, offset and cambre readings are taken on the top and sides of the rail head, and on the sides of the base.



If a Sperry Flash Butt Weld fails to meet, upon such exact inspection, the rigid standard required of it, it is immediately broken and re-welded.

**f) The Stress Relieving Furnace (Slide 21)**

In this picture, a weld is being normalized in the Stress Relieving Furnace; the Rail Welder in which the weld has just been made is inside the Welder Car seen in the background. The Stress Relieving operation is of vital importance to weld-quality, and the Furnace is equipped with a Recording Pyrometer which gives a permanent record of the heat treatment of every weld. When the weld has been brought up to the proper temperature in the oil fired furnace, it is removed and immediately covered with an asbestos hood.

**g) Slow Cooling (Slide 23)**

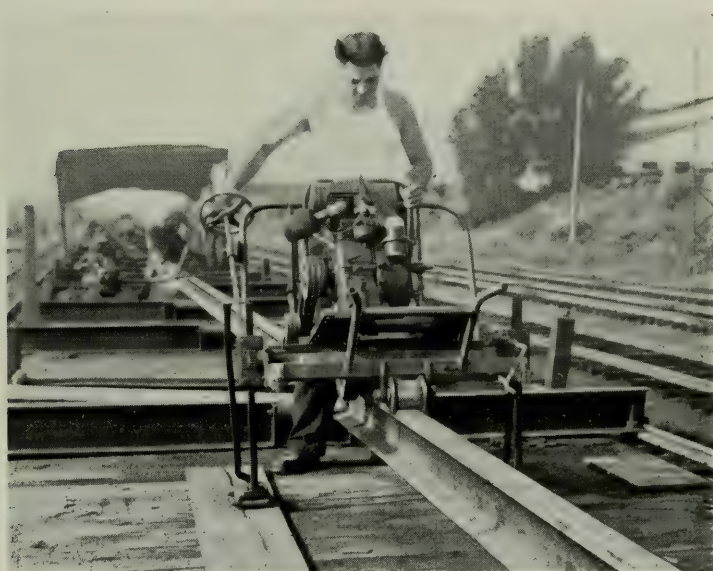
As soon as the weld emerges from the Stress Relieving Furnace, it is immediately covered with this Asbestos Hood which retards the cool-

ing of the weld and materially improves its resistance to impact and fatigue.

#### h) Grinding (Slide 15)

After removal of the Asbestos Hoods the upset metal is ground off so that the final weld presents an appearance as you see here. This grinding method was not determined arbitrarily, as you might suppose, but is a result of considerable research through rolling load tests. It was found that proper grinding improves the fatigue resistance of the weld.

Grinding equipment consists of one grinder for the sides of the head, a cup wheel grinder for rough grinding of the rail head, a grinder



for trimming the top of the base and the fillet area underneath the head, and a finishing grinder for the running surface. These operations are carried on at stations one rail length apart.

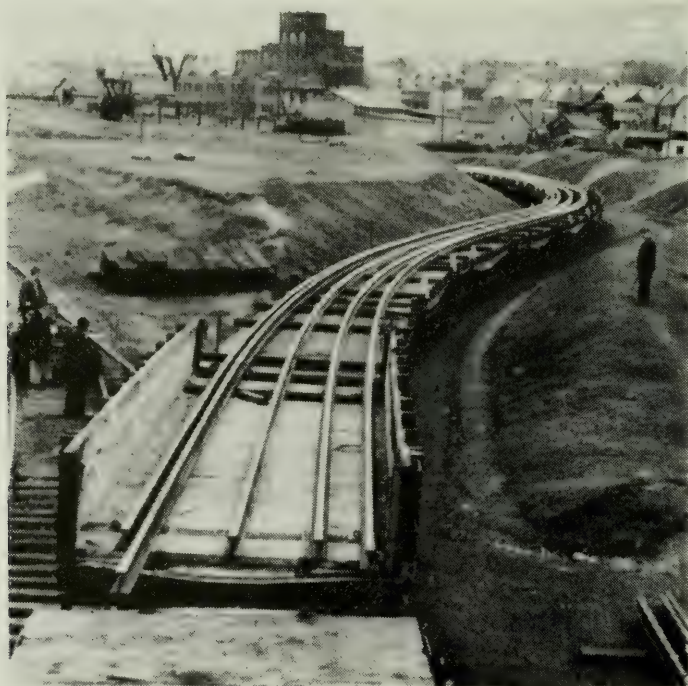
#### 4) TRANSPORTATION OF LONG RAILS (Slide —)

Here you see train loaded with ten strings of long rails. These rails were not fastened down to the cars in any way. However, they move easily around curves as sharp as 14 degrees with no difficulties being experienced. Further experience in the transportation of long rails may indicate other methods of loading them. With the increased use of butt welding it seems likely that welding may frequently be done at a central station on any one road, since operation of the Welding Machine could be made more efficient and economical under such an arrangement. Such a central station could perhaps serve several roads. This would require transportation of long strings of rails over considerable distances, something which would require some study and planning.



#### 5) UNLOADING LONG RAILS (Slide —)

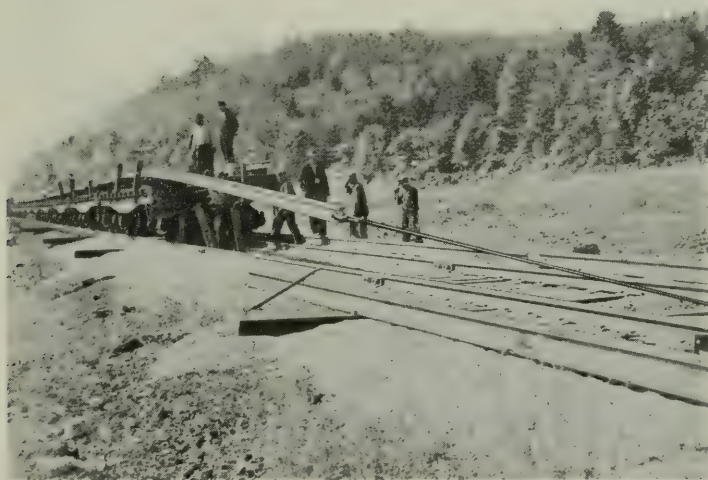
This slide illustrates the method of unloading long rail. A chain or cable is fastened to a bolt hole at the end of the long rail, and the other end of the chain is fastened securely around the rail in track. Then the rail train pulls ahead allowing the long rail to slide off the







end of the car. As the rail comes to the ground it is fastened with ordinary cut spikes, placed about a rail length apart, to hold it in an upright position. In this instance the rail is being unloaded on a curve and you will note that care is being taken to see that it does not slide out of position. Unloading long rail by this method can be done con-





veniently and quickly and we believe that it is possible to unload two rails at a time, thus reducing the amount of time used.

The next slide is another view of long rail being unloaded on a curve. After the rail is unloaded, the old rail is removed from position and the long rail is lined into position with lining bars. This can be done very rapidly, and when movement of trains permit.

#### 6) BUTT WELDED RAIL IN TRACK

Many of you have probably seen the long rail installed by the Bessemer & Lake Erie, at River Valley, and therefore you are no doubt familiar with the practicability of continuous rail. I will not attempt to go into the question of expansion and contraction as this has been thoroughly covered in numerous articles in the Engineering Journals.



It is sufficient to say that no serious difficulties have been encountered, to my knowledge, in any of the installations of continuous rail. I might point out that Butt Welding is not limited to continuous rail alone, but may be used to reduce the number of rails in track by welding two or three, or more, standard lengths of rail together, thus obtaining the advantages of eliminating a large proportion of the joints.

The next slide shows a load of 225 ft. flush welded rails on the Victorian Railway of Australia. These are 100 lb. rails and thirty strings are loaded on the flat cars. As I mentioned before, butt welding abroad has been confined mostly to producing longer length rails in an

effort to reduce the number of joints usually without resort to special fastenings. In many cases, used rails have been cropped and welded together for laying in secondary, or yard tracks. I visited a classification on the Nord Railway in France, where many of the tracks had been laid with flash butt welded rail, about 600 ft. long. It is claimed that this has greatly reduced maintenance costs for this yard.

It is interesting to note the ease with which the long rails, shown in the slide, adjust themselves to the turnout. In our experience on the D & H, the maximum number of 131 lb. rail strings loaded on one train of cars was 14, but this gives proof that larger loads are probably practical so that shipment may be more economical.

## **7) FUTURE DEVELOPMENT OF FLASH BUTT WELDING**

As a preliminary to possibly more extensive use of Flash Butt Welding on the Railroads in this country, Sperry Products is offering a Flash Butt Welding Service which will probably take care of the needs of those roads who are considering making installations within the next few years. We do not intend to confine ourselves entirely to such a service, but, expect that some of the larger railroads may wish to purchase machines for their own use, at such a time as they can foresee the welding of large quantities of rail. Other roads perhaps will desire to have their welding done on a contract basis, especially those roads whose annual program for rail renewal would not warrant the purchase of a machine. Thus, we will have available the welding service, and machines for outright sale.

The Flash Butt Welding Machine is essentially production equipment, operating similar to an assembly line in a modern factory. The first cost of the machine is a big item of cost and therefore the greater the production the lower becomes the amount of this first cost, which must be distributed over each weld. Our efforts have been directed first at producing a weld of uniform high quality through automatic operation and control of the welding and heat treating procedure.

Second, we have tried to coordinate this procedure to give a high rate of production, and consequently a lower cost per weld. After the machine is in production, the cost of power is an important item. With our present machine, operating from steam delivered by a locomotive, the power costs are much higher than would obtain in the case of a machine located at a central position and operated from purchased electric power. However, it was our idea to make a fairly portable equipment for the first machine, since naturally it will be necessary to transport it around the country, and to use it at locations where the electric power may not be available. At the same time the use of electric power requires construction of a small sub-station which would not be warranted unless a large number of joints were to be welded. Further advantage of a permanent or a semi-permanent location would be more efficient handling of rail and thus increased production rate.



On our present machine, we have averaged over a long period of time approximately ten to twelve welds per hour. The maximum rate is about 16 welds per hour. In a permanent location, with a well organized set-up, we estimate that it would be possible to arrive at a rate of 20 or more welds per hour. With such a set-up, the cost of welded joints should be low. Very likely it would be found cheaper than the use of the standard joint bar and bolts.

Much has been said and written about the advantages and savings offered through rail welding. Certainly we can say that joint main-



tenance is eliminated and smoother riding results. In addition to this signal circuit bonds are not necessary and very probably maintenance on rolling in stock is reduced through the elimination of pounding at the joints. It is perhaps too early to estimate the reduction in expenditures resulting from Butt Welded Rail but it is obvious that substantial savings may be made, thus encouraging the further study and development of Butt Welded Rail in track.

(Address illustrated with projector slides and moving pictures).

PRESIDENT: Are there any questions you gentlemen would like to ask Mr. Loos?

MR. C. O. DAMBACH: If I understood the speaker correctly he stated that there is an opportunity of using continuous rails on inside

tracks by welding relayers. Since it is my understanding that the success of the continuous rail is due primarily to the high degree of maintenance of main track in continuous rail territory, I was wondering whether the same success would prevail on inside tracks where that condition does not exist.

Another question I have is in regard to economy in using the continuous rail and I was wondering whether the speaker had any figures to sustain his statements that an economy could be effected.

MR. LOOS: As to your first question, I have seen some rails run to a length of 600 feet end to end in yard tracks. Where the welding is done on a central location it can be welded quite cheaply, cheaper than the actual joint material. I was told this by the chief engineer on some of this work in Europe. I do not know of any insulation in yard tracks in this country. The engineer told me the maintenance was considerably reduced. I know the Delaware & Hudson Railroad is keeping comparative figures for double track, the rails are welded, and on the southbound track they are not. I do not know whether they have had sufficient time to arrive at a definite conclusion on that.

QUESTION: How do you load the rails on the flat cars?

MR. LOOS: They are loaded on the flat cars directly as they come out of the welder. A series of rollers are placed on the flat cars and the rail is drawn over them by a winch and cable.

QUESTION: How will the stored rails, shown in the movie, be loaded on flat cars?

MR. LOOS: One end of the storage rack is built into a ramp. A string of cars will be backed up to the ramp and the rails will be pulled on the cars with a locomotive and cable.

MR. O. R. WIKANDER: The railroads do not build any new lines any more and flush welding would only be to existing track to make it continuous?

MR. LOOS: That is right. Also welding in this country has been confined to new rails only when making rail renewals. Certain foreign roads are welding used rail, this is done by removing the rails and cropping the ends, then welding them.

QUESTION: Is it practical to do flash welding to rails in track?

MR. LOOS: It is not practical to do it in existing tracks. At least it does not yet appear practical to us.

QUESTION: Is it being done in any way now?

MR. LOOS: It has been done by thermit or oxyacetylene methods, but this requires giving up the track for a considerable period of time.



QUESTION: If you had a broken rail somewhere in one of these lengths you would have to use a splice bar, would you not?

MR. LOOS: You surely would, but the procedure would depend upon conditions. It would be necessary to cut out a section of 39 ft. long, or shorter, and insert a rail to fit. Equipment is available that would permit this to be done easily and quickly. However, we are hoping that with improvements in rail manufacture, broken rails will be few in long welded rail. Another factor might be the reduction in rail defects, due to elimination of joints. We find a definite relation between the location of transverse fissures in a rail and the location of the joints. We have taken data on the location of more than 20,000 transverse fissures, and find that fissures occur most frequently in the third foot from each end of the rail and in the middle, opposite the joint in the other rail.

QUESTION: Did you say you found transverse fissures opposite the joint?

MR. LOOS: That is one of the points at which they occur most frequently in a rail length. A chart of fissure location, which we have made up, shows that they occur most frequently about three feet from each end and at the center of the rail.

QUESTION: Opposite the other joint?

MR. LOOS: Yes, opposite the other joint. Of course, joints are not always directly opposite the center of the other rail, but on the average I believe this is so.

QUESTION: Is it not true that transverse fissures originate in a nucleus which is present in the rail prior to its installation in track? If this is true it seems to me that joint location would have no effect on transverse fissures.

MR. LOOS: Transverse fissures are definitely known to be associated with what are called shatter cracks in rails. It is thought that these may be originally merely local points of high stress set up in rapid cooling of rail at the mill. It has also been shown that shatter cracks do not develop into transverse fissures unless the rail is subjected to loads considerably higher than the normal wheel load. Impact loads, due to flat wheels, or unbalanced locomotive drivers are often responsible. It seems quite probable that a combination of impact loads and high stress due to bending, occurs near the joints and at the center of the rail. This causes shatter cracks to start to grow into transverse fissures. As rail which contains shatter cracks may contain a considerable number of them, it is only the one that is directly affected by unusually high load that starts developing into a transverse fissure. Although shatter cracks are not always uniformly distributed

in a rail (the extreme ends being notably free of them) their distribution on the average is probably fairly uniform. Thus it would be expected that the greatest number of transverse fissures would develop at points in the rail where unusually high stresses are most frequent.

QUESTION: Have you any experience to show what the costs of the flash welded joint would be?

MR. LOOS: It is very difficult to say exactly what the cost of a welded joint would be. The present Sperry Flash Butt Welder has shown a cost per weld considerably higher than the cost of standard joint material. This does not give a true picture of what the cost will eventually be, because our efforts were primarily to develop a uniform high quality weld. With wider adoption of welded rail the cost could be greatly reduced. A flash welding machine at a central location in quantity production, using electric power instead of a steam locomotive, and with well organized rail handling, should be able to produce a joint whose cost is equal to, or less than the cost of joint material. For example, the first cost of the equipment is a big item, a flash welder costing about \$68,000.00. On top of this is accessory equipment for power, rail handling and grinding. A high production rate of say 20 to 30 welds per hour would reduce the amount of first cost distributed over each weld. Operating cost would include power, labor and incidentals which would vary according to local conditions. It is entirely possible that the cost could be brought down as low as \$2 to \$3 per weld, not including the cost of laying the long rail. The relative economy of welded rail must take into account the savings in maintenance. I believe that the Delaware & Hudson R. R. are keeping records on similar pieces of track, one butt welded, and the other with ordinary joint bars. I think it will take some time longer to obtain sufficient data on which to make a reliable comparison as to the ultimate cost of each type of construction. There is no doubt however that considerable savings are resulting from continuous welded rail.

MR. WIKANDER: How long do these sections of continuous rail go.

MR. LOOS: They now run from 2200 to 7700 feet long. The length depends upon the location of insulated joints and switches which require the use of splice bars. But for these, they could be installed in much longer lengths.

PRESIDENT: Is there anything further, gentlemen?

MR. C. M. WHEELER: Mr. President, I think we all enjoyed Mr. Loos' very interesting and instructive talk, and I move that a rising vote of thanks to him and the Sperry Products, Inc., be given for his very splendid efforts.

PRESIDENT: I think that is the proper thing. If you will please rise we will extend a vote of thanks.

(A rising vote of thanks was given at this point).

PRESIDENT: If there is nothing further, we will adjourn to the lunch tables.

J. D. CONWAY, Secretary.

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**C. M. HACKETT**

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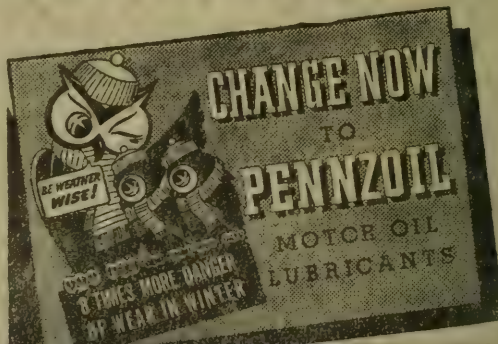
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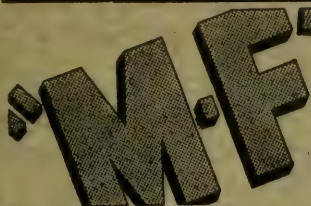
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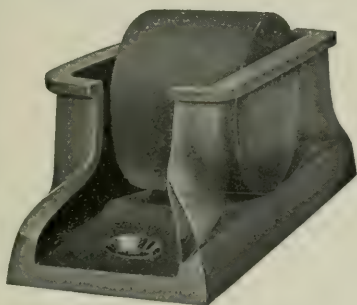
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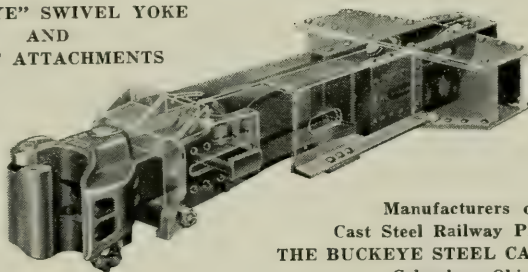


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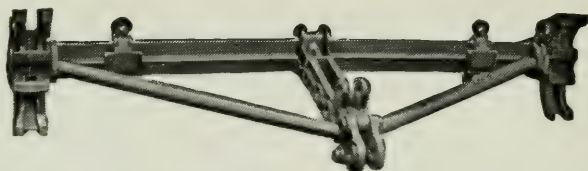


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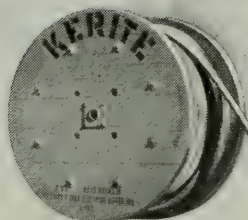
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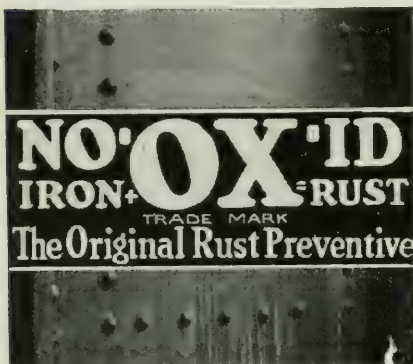
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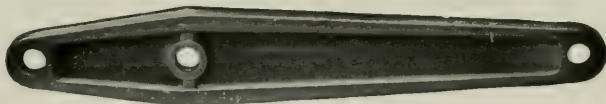
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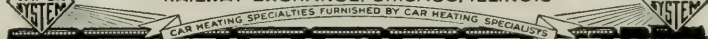
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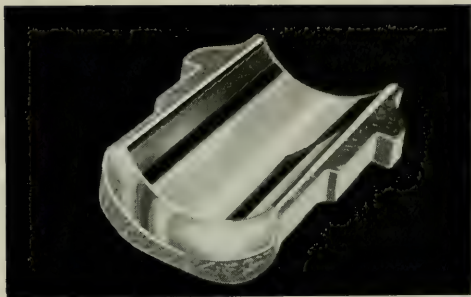
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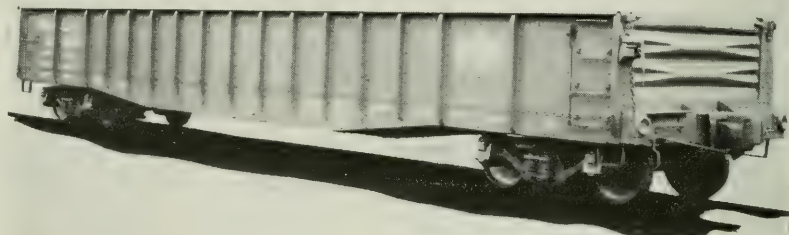
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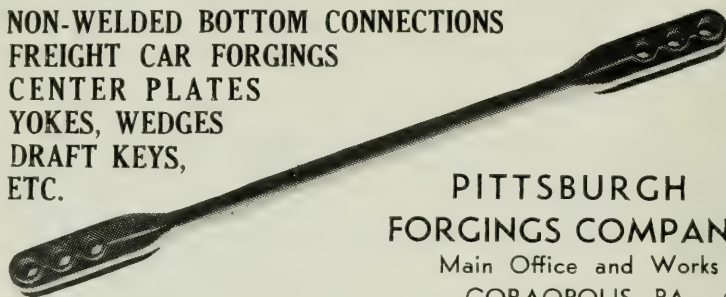
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NOTE—This form to be filled out in full by typewriter or printed and mailed to J. D. Conway, Secretary, 1941 Oliver Building, Pittsburgh, Pa. Membership fee, including dues, is \$3.00 for each fiscal year or part thereof, except those proposed in September or October. Those proposed in these months will be credited upon payment for the following fiscal year. Dues are payable in advance.

The fiscal year ends with the month of October.

### The Railway Club of Pittsburgh:

19

Gentlemen:

Will you kindly consider my Application for Membership in your Club at the next meeting:

Name.....

Title.....

Company.....

My Address.....

Recommended by.....

# OFFICIAL PROCEEDINGS

## OF

# The Railway Club of Pittsburgh

Organized October 18, 1901

Vol. XXXVIII  
No. 3

**Pittsburgh, Pa., Jan. 26, 1939**

\$1.00 Per Year  
25c Per Copy

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McKees Rocks, Pa.

#### Secretary

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The Railway Supply Manufacturers' Association,  
Pittsburgh, Pa.

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Supt., Railway Express Agency, Inc.,  
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R. H. FLINN, General Superintendent, The Pennsylvania Railroad, Pittsburgh, Pa.  
K. P. FORSBERG, Chief Engineer, P. & L. E. Railroad Company, Pittsburgh, Pa.  
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G. M. SIXSMITH, Superintendent, The Pennsylvania Railroad, Pittsburgh, Pa.

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C. E. ADAMS, Division Superintendent, The Pennsylvania Railroad, Pittsburgh, Pa.  
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WILLIAM C. HANSEN, Assistant Manager, A. Stucki Company, Pittsburgh, Pa.  
C. H. REYMER, Sales Representative, Oliver Iron and Steel Corp., Pittsburgh, Pa.  
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 HARRY C. GRAHAM, Vice President, Pittsburgh Screw & Bolt Corp., Pittsburgh, Pa.  
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 JOSEPH A. CRENNER, District Manager, Dearborn Chemical Company, Pittsburgh, Pa.  
 JOHN C. SHINGLEDECKER, Supervisor of Service Stations, The Pennzoil Co., Pittsburgh, Pa.

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 FREDERICK H. EATON, Sales Engineer, American Car and Foundry Company, Pittsburgh, Pa.  
 C. W. GOTTSCHALK, Asst. Traffic Manager, Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

## PAST PRESIDENTS

|                  |                                  |
|------------------|----------------------------------|
| *J. H. McCONNELL | October, 1901, to October, 1903  |
| *L. H. TURNER    | November, 1903, to October, 1905 |
| *F. H. STARK     | November, 1905, to October, 1907 |
| *H. W. WATTS     | November, 1907, to April, 1908   |
| *D. J. REDDING   | November, 1908, to October, 1910 |
| *F. R. McFEATERS | November, 1910, to October, 1912 |
| *A. G. MITCHELL  | November, 1912, to October, 1914 |
| *F. M. McNULTY   | November, 1914, to October, 1916 |
| *J. G. CODE      | November, 1916, to October, 1917 |
| *D. M. HOWE      | November, 1917, to October, 1918 |
| *J. A. SPIELMAN  | November, 1918, to October, 1919 |
| H. H. MAXFIELD   | November, 1919, to October, 1920 |
| FRANK J. LANAHAH | November, 1920, to October, 1921 |
| *SAMUEL LYNN     | November, 1921, to October, 1922 |
| *D. F. CRAWFORD  | November, 1922, to October, 1923 |
| *GEO. D. OGDEN   | November, 1923, to October, 1924 |
| A. STUCKI        | November, 1924, to October, 1925 |
| *F. G. MINNICK   | November, 1925, to October, 1926 |
| G. W. WILDIN     | November, 1926, to October, 1927 |
| E. J. DEVANS     | November, 1927, to October, 1928 |
| W. S. McABEE     | November, 1928, to October, 1929 |
| E. W. SMITH      | November, 1929, to October, 1930 |
| LOUIS E. ENDSLEY | November, 1930, to October, 1931 |
| *JOHN E. HUGHES  | November, 1931, to October, 1932 |
| F. I. SNYDER     | November, 1932, to October, 1933 |
| C. O. DAMBACH    | November, 1933, to October, 1934 |
| R. H. FLINN      | November, 1934, to October, 1935 |
| R. P. FORSBERG   | November, 1935, to October, 1936 |
| E. A. RAUSCHART  | November, 1936, to October, 1937 |
| G. M. SIXSMITH   | November, 1937, to October, 1938 |

\*—Deceased.

Meetings held fourth Thursday of each month except June, July and August.



# PROCEEDINGS OF MEETING

JANUARY 26, 1939

The meeting was called to order in the Fort Pitt Hotel at eight o'clock p. m., with President J. D. Beltz in the Chair.

Registered attendance 261, as follows:

## MEMBERS

|                       |                         |
|-----------------------|-------------------------|
| Adams, F. W.          | Edsall, S. D.           |
| Allen, Earl M.        | Emery, E.               |
| Ambrose, W. F.        | Endsley, Prof. Louis E. |
| Aulbach, A. J.        | Fair, J. M.             |
| Bagaley, W. W.        | Farlow, G. B.           |
| Barr, H. C.           | Faustman, Paul L.       |
| Bauer, F. C.          | Fisher, Earl H.         |
| Beitsch, George F.    | Fralic, C. F.           |
| Bell, Charles W.      | Frauenheim, Pierce H.   |
| Beltz, J. D.          | Gardner, George R.      |
| Bender, H. P.         | Geiser, W. P.           |
| Berg, K.              | Glaser, C. J.           |
| Binau, R. J.          | Glaser, J. P.           |
| Black, C. R.          | Golden, A. B.           |
| Boyer, W. W.          | Greenslade, G. R.       |
| Britt, T. E.          | Griest, E. E.           |
| Brown, E. F.          | Groves, W. C.           |
| Buchanan, C. C.       | Haller, N. M.           |
| Buzzerd, J. P.        | Harris, John P.         |
| Campbell, F. R.       | Hautman, Hugo           |
| Carey, C. D.          | Heer, Walter            |
| Cipro, Thomas         | Hengst, Guy E.          |
| Clarke, A. C.         | Henry, C. J.            |
| Clausen, Harold C.    | Hilstrom, A. V.         |
| Conway, J. D.         | Hopper, George          |
| Courtney, H.          | Huber, C. G.            |
| Crawford, Burt H.     | Hunt, L.                |
| Dambach, C. O.        | Jarres, F. A.           |
| Dankmyer, F. C.       | Johnson, J. W.          |
| Davis, Charles S.     | Johnson, R. N.          |
| Dawson, P. R.         | Johnson, W. M.          |
| Dean, E. E.           | Kearfott, W. E.         |
| Dean, R. W.           | Kentlein, John          |
| Deike, George H., Jr. | Kohl, C. G.             |
| Dickinson, B. F.      | Kroske, J. F.           |
| Dickson, K. B.        | Lanahan, Frank J.       |
| Doscher, Fred H., Jr. | Lanahan, J. S.          |
| Dugan, G. R.          | Lesko, Andrew           |
| Dunham, C. W.         | Leet, C. S.             |
| Durell, W. A.         | Leonard, P. J.          |
| Eberhart, James A.    | Lockard, W. N.          |
| Eckels, Wilber        | Long, R. M.             |

|                       |                       |
|-----------------------|-----------------------|
| Margiotti, Charles J. | Schweitzer, A. C.     |
| Masterman, T. W.      | Searles, E. J.        |
| Mayer, L. I.          | Severn, A. B.         |
| Megee, C. R.          | Sheffer, R. W.        |
| Mellett, D. D.        | Shellenbarger, H. M.  |
| Miller, S. H.         | Sheridan, T. F.       |
| Misner, George W.     | Showalter, Joseph     |
| Mitchell, W. S.       | Smith, G. M.          |
| Morgan, Homer C.      | Snyder, F. I.         |
| Morrison, R. A. J.    | Snyder, Joseph J.     |
| Moser, G. B.          | Stoffregen, Louis E.  |
| Murray, C. C.         | Stevens, L. V.        |
| Murray, Stewart       | Stewart, J. C.        |
| McAbee, W. S.         | Stocker, H. F.        |
| McGeary, E. J.        | Sutherland, L.        |
| McHail, J. L.         | Sutton, K. B.         |
| McKinley, A. J.       | Swank, W. E.          |
| McKinley, John T.     | Taylor, J. M.         |
| McLaughlin, H. B.     | Ternent, H. J.        |
| McMullin, Harry R.    | Teskey, Dr. Walter J. |
| Nathan, W. S.         | Tipton, G. M.         |
| Nieman, Charles J.    | Tracey, J. B. A.      |
| Nies, E. L.           | Truschel, Joseph H.   |
| Noble, J. A.          | Tryon, Ira D.         |
| Noonan, Daniel        | Unger, Dr. John S.    |
| Peirce, W. B.         | Urtel, E. J.          |
| Pollock, M. C.        | Utzler, E. S.         |
| Posteraro, S. F.      | Wagoner, K. J.        |
| Purchard, Paul        | Wallace, O. T.        |
| Reagan, Henry V.      | Westmeyer, Frank T.   |
| Reiser, Frank         | Wickerham, F. A.      |
| Renshaw, W. B.        | Wiland, O. M.         |
| Reynolds, D. E.       | Wilkins, Harry        |
| Richard, L. J.        | Wilson, W. H.         |
| Rudisill, D. E.       | Woodings, R. T.       |
| Rupp, E. S.           | Woodward, R.          |
| Rutter, H. E.         | Wright, John B.       |
| Ryan, D. W.           | Yarhouse, W. T.       |
| Schiller, John        | Yarnall, Jesse        |
|                       | Yohe, J. K., Jr.      |

## VISITORS

|                    |                    |
|--------------------|--------------------|
| Angerman, J. C.    | Burwell, T. C.     |
| Babbitt, W. H.     | Byrnes, D. A., Jr. |
| Bagaley, Robert F. | Collins, J. J.     |
| Bates, C. C.       | Cordell, E. H.     |
| Bell, R. M.        | Cornwell, John J.  |
| Boston, J. R.      | Costello, M.       |
| Beahm, Donald P.   | Crovet, Raymond L. |
| Buckley, E. V.     | Curtis, E. D.      |
| Bukey, J. W.       | Daily, Irwin P.    |
| Burns, S. P.       | Davis, William B.  |
| Burt, R. W.        | Dean, G.           |

Deitsch, George J.  
 Devlin, J. C.  
 Downey, W. R.  
 Durant, C. H.  
 Earnest, Earl W.  
 Eines, James A.  
 Ehringer, George C.  
 Ehringer, Lawrence  
 Evans, John E.  
 Evans, John E., Jr.  
 Fairgrieve, E. H.  
 Fast, D. W.  
 Gallagher, W. P.  
 Grego, John  
 Gray, R. A.  
 Healy, C. O.  
 Herrick, H. B.  
 Hewes, John, Jr.  
 Hildenbrand, L. B.  
 Hillman, Kurt  
 Holtzworth, C. H.  
 Hostler, N. R.  
 Kauffman, Norman H.  
 Keane, F. M.  
 Keys, A. H.  
 Kimball, L. P.  
 Kirman, G. E.  
 Koenig, William  
 Kopp, M. S.  
 Kouche, N. J.  
 Krause, E. W.  
 Lee, George R.  
 Levison, L. L.  
 Lewis, S. B.  
 Long, James A., Jr.  
 Lorenzo, V. A.  
 Lumpp, Ray J.  
 Malenock, W. M.

Mangold, E. J.  
 Marzwick, Charles  
 Mashl, S.  
 Miller, J. Paul  
 Milligan, J. A.  
 Mollman, M. L.  
 Moneyhun, W. J.  
 Morrison, Arthur L.  
 McKinley, S. P.  
 McLaughlin, G. H.  
 Payne, H. A.  
 Platt, W. G.  
 Pugh, J. R.  
 Pugliese, S. C.  
 Rafferty, W. S.  
 Reagan, Paul  
 Rulong, Charles  
 Schellhaus, H. W.  
 Scheuerman, J. A.  
 Schneeberger, P. J.  
 Smith, I. G.  
 Smothers, W. M.  
 Snyder, H. DeL.  
 Spinelli, Charles J.  
 Stevens, D. F.  
 Stewart, E. P.  
 Sunderbrink, C. W.  
 Thomas, M. F.  
 Van Loon, F. W.  
 Van Randt, L.  
 Van Wormer, G. M.  
 Washington, F. W.  
 West, O. E.  
 Wetzell, L. W.  
 Wilkins, John W.  
 Willard, P. F.  
 Williams, R. R.  
 Wilson, W. S.

Wynard, N. L.

PRESIDENT: Gentlemen, we will dispense with the roll call because registration cards have been presented at the door. We will also dispense with the reading of the minutes of the previous meeting, as those minutes are in print and have, no doubt, been received by the membership now. The Secretary will read the applications for membership.

SECRETARY: Mr. President and gentlemen, we have the following proposals for membership:

Atkinson, T. H., Jr., B. & B. Inspector, Pennsylvania Railroad, 124 Washington Street, Freeport, Pa.  
 Recommended by T. H. Gray.  
 Bovard, Harry D., President, Smith Porous Drain Pipe Corporation, 405 Penn Avenue, Pittsburgh, Pa.  
 Recommended by J. D. Conway.  
 Brown, John W., Assistant Foreman, Pullman Company, 205 Conniston Street, Mt. Oliver, Pittsburgh, Pa.  
 Recommended by G. N. Kennedy.

Cramer, Frank F., Assistant Chief Metallurgist, Edgar Thomson Works, Carnegie-Illinois Steel Corporation, 2019 Hampton Street, Swissvale, Pa. Recommended by R. W. Steigerwalt.

Dawson, P. R., Storekeeper, B. & O. R. R. Co., 2940 Churchview Avenue, Pittsburgh, Pa. Recommended by F. A. Jarres.

Johnson, Robert N., President, Robert N. Johnson Company, 531 Hamilton Road, Thornburg, Crafton P. O., Pa. Recommended by S. H. Miller.

Loos, Carl W., Eastern Sales Representative, Sperry Products, Inc., 1505 Willow Avenue, Hoboken, N. J. Recommended by J. D. Conway.

Margiotti, Charles J., Division Counsel, B. & O. R. R. Co., Grant Building, Pittsburgh, Pa. Recommended by J. D. Conway.

McCleary, G. T., Car Service Agent—Car Service Division, Association of American Railroads, 204 West Madison Avenue, Youngstown, Ohio. Recommended by C. R. Megee.

Reynolds, David E., Salesman, The Anchor Packing Company, 405 Penn Avenue, Pittsburgh, Pa. Recommended by J. D. Conway.

Westmeyer, F. T., Car Service Agent—Car Service Division, Association of American Railroads, 1103 Pennsylvania Station, Pittsburgh, Pa. Recommended by C. R. Megee.

**PRESIDENT:** After these names have been approved by the Committee they will become members and we will be very glad to receive them.

I have two communications here regarding the same matter, one being a letter from the Engineers Society of Western Pennsylvania in which an invitation has been extended to all of us to attend the meeting of that society to be held in the William Penn Hotel at eight o'clock on Wednesday evening, February 15, to listen to an address by Samuel O. Dunn, Chairman of the Board, Simmons-Boardman Publishing Company of Chicago, and Editor of "Railway Age," who will speak on the subject of "Transportation."

I will now ask the Secretary to read any communications that should come before us.

**SECRETARY:** We have received notice of the death of one of our members, H. G. Taylor, President, Ball Chemical Company, Pittsburgh. Mr. Taylor died on December 26, 1938. He joined our Club on October 18, 1901. I might mention that that was the first meeting of this Club when it was organized.

**PRESIDENT:** The proper memorial will be inserted in our magazine.

Gentlemen, it is now my supreme pleasure to be able to introduce to you one who has been handling railroad business for quite a while, the Honorable John J. Cornwell, General Counsel for the Baltimore and Ohio Railroad Company, who will address you on the subject "Troubles of the Railroads." Mr. Cornwell.

## THE TROUBLES WITH THE RAILROADS

By **JOHN J. CORNWELL**, General Counsel, The Baltimore & Ohio Railroad Company, Baltimore, Md.

Gentlemen of the Railway Club of Pittsburgh:

It is not my purpose to try to convert this occasion into an indignation meeting but I want to preface my remarks by saying that I do think railroad men, especially those connected with management and



operation, have a right to feel indignant not only over the present financial plight of their employers but even more indignant at the fact that many politicians and publicists have been blaming them for the situation. I share some of that indignation, although I am just a lawyer, not in its true sense a railroad man. I not only share that indignation which I am sure many of you feel, but I am going to express it.

You have a right not only to be indignant at what has been done to the railroads; at the attempt to lay the blame for their financial plight upon you, but also at the preachments to the public that the railroads have collapsed and are not rendering efficient transportation service; at the repeated assertions that railroad management is inefficient and unfit.

It is true that the railroads are in a serious state financially, the reasons for which we will consider presently, but so far their owners and creditors, not the shipping public, have been the sufferers. That the men who manage and operate the railroads have been able, under the circumstances, to keep railroad transportation so efficient is a tribute to their courage, their energy and to their ability. I can say that without blushing for, as I have said before, I am just a lawyer. I am not a railroad manager or operator. I head departments which take in nothing but pay out millions—Law, Claims and Taxes. My job is to keep, if possible, claimants, litigants and government from taking all the revenue.

If you men who operate the railroads had not discovered ways to get more power out of a ton of coal; to treat the water that makes steam in the locomotives so as to reduce greatly their maintenance costs; if you had not done hundreds of other things of the same general character the railroads would have collapsed long ago. But with all you could do to reduce operating costs and to give more efficient service; quicker freight transportation and safer and more comfortable passenger service, total outlays have increased steadily because of more and more government regulation—yes, management; because of increased wages, costs of fuel and materials of all kinds and further and finally because of ever mounting federal taxes.

While these charges were increasing, income, during the past decade, has fallen lower and lower so that the gross revenues of the railroads, in many instances, are less than half of what they were in the previous decade.

The revenue decrease is, of course, due to two things: first, lower rates; second, the decrease in the volume of business on the rails.

Now, why should the politicians and the public blame you and other railroad officers and managers for those things?

But, they also say the railroads are overcapitalized; that they have too much debt and have to pay too much interest.

Of all the misrepresentations with respect to the railroads none is more flagrant than that one.

There is an investment of twenty-six billions of dollars in the railroads of the country. The par value of all their securities in the hands of the public is nineteen billion, seven billions less than the investment.

Their indebtedness and interest requirements are lower in comparison to the total investment than in their more prosperous days from 1923 to 1930.

What then is the matter with the railroads?

Not enough net earnings; not enough margin between their income and their outgo because, as I have explained, their expenses have been increased by government and their income reduced by the same authority.

Is that a fair statement?

I have already reminded you how operating costs and taxes have been increased.

While it is true that the lessened volume in business is due in large part to the Depression and Recession—two different names for the same situation—government has created, fostered and subsidized the competitors of the railroads, refusing to place them under the same regulation administered to the railroads. It has used money taxed from the railroads with which to build up their competitors; the trucks, the buses, the waterways and the airplanes.

The American people are entitled to the benefits of new transportation; they are entitled to anything they want and are willing to pay for but a new form of transportation, where it is preferable and superior, could make its own way. Where it does this without government subsidies, and takes the business of the railroads, the owners and the managers of the railroads have no right to complain. But that is not what has been happening.

The government, in a score of years, spent more money on highways than was expended in the construction of all the railroads over a period of one hundred years. The railroads pioneered and developed the country, welding it into a compact nation. Cities and towns grew up along and because of them. The American people put their savings into them. Then government constructs a great net of highways and turns loose on these public highways lightly taxed and unregulated competitors of the railroads.

It, the government, taxes the railroads, takes their money and everybody's money to deepen your inland rivers and canalize streams all over and all around for the free use by any one who will operate a barge or boat line. Not satisfied with providing that unfair competition it establishes and maintains its own barge line on the Mississippi River to take business from the railroads and to demoralize their freight structure.

Finally, public money has been poured out in veritable torrents to construct airports all over the country and for mail subsidies to the newest form of transportation—the airways.

And all this time a war has been carried on against the whole rail-

road industry because of the alleged misdeeds of a few promoters or speculators who made money in real estate or stock speculation and broke into the railroad field. The halls of Congress and the radio broadcasting stations have resounded with denunciations of the railroads and railroad managers by the politicians who fostered unfair competition and then hamstrung the railroads in their regulations so they were not free to meet that competition.

Never has our government, any government, pursued such a destructive policy toward any industry as it has toward the railroads which are responsible for the country's growth and development and in which almost one-tenth of the savings of all our people is invested. The Electric Light and Power Industry is beginning to get some of the same medicine but the railroads have been dosed with it for a long time.

I know from reading history that the railroads invited some of it by their practices before the days of regulation, in those good old free-booting days, when "everybody was doing it" but you and I and the railroad men of today know of those misdeeds only from history and hearsay. There is no business in this country cleaner or more devoted to public service today, than are the railroads, on the average.

Now that, briefly, is why the railroads are in their present plight. The politicians put them there. The people, at last, are beginning to understand. It is your job and mine to aid them in getting even a better understanding of the situation.

But you may ask me what will come out of all this?

What can be done about it?

First: I express the hope that government ownership and operation will not result. Public opinion is opposed to that but unless there is more constructive action by the government—the politicians—than we have yet had I very much fear it is inevitable. Already the federal government has entered fields of business and extended control over business to an extent that would have been unthinkable in times of peace a score of years ago. We know only too well there are persons in and on the fringes of government, who are ambitious to have the government assume absolute control of all industry and our entire economic life which, if accomplished, means as complete regimentation of the people as in the totalitarian countries. If the government should be forced to take over the railroads a tremendous impetus would be given the movement for complete "socialization" of all industry and professions. The government, if it owned the railroads, would no more suffer competition with them than it allows competition with the United States mail, so it would have to take over all transportation and communication. Then it would have to take fuel supplies, rail mills and very soon the government would be as absolute as in Russia, owning everything and everybody working for and slave to the government.

One danger lies in the fact that the owners of railroad securities



have become hopeless. Some of them see government ownership as their only chance to save even a part of their investment and some of them have joined the Socialists and other government ownership advocates.

One of the strong men of the Interstate Commerce Commission was long active in advocating government ownership while at the same time serving on the commission that, through regulation, held in its hands the fate of the railroads.

At the same time the Chairman of the Senate Committee on Interstate and Foreign Commerce prepared and introduced into the Senate a bill providing for government ownership of the railroads. Neither of these gentlemen has had much, if anything, to say on the subject recently but so far as I know neither has recanted.

But, it was in such an atmosphere and laboring against such influences that you railroad men had to carry on; had to operate the railroads and try to keep them solvent. It was a herculean task.

Before this very body nearly a decade ago, I then discussed the railroad problem, pointed out as best I could where we were headed. I do not now need to tell you we have arrived.

Well, what is being suggested as a way out? Some of the politicians are urging that the roads be "put through the wringer", through Bankruptcy, so as to wipe out a large part of their capital and reduce interest payments. If that is done as soon as the roads showed some earnings on the reduced capital immediately there will be increased taxes and increased wage demands to absorb the surplus earnings and again impoverish the railroads to say nothing of reductions in rates that would lessen their earnings if the present political and governmental attitude toward the railroads is maintained.

Now maybe the policy or course the politicians and government have maintained toward the railroads was right and wise. I do not think it was, but certainly it has resulted in the destruction of billions of dollars of the people's savings that were invested in the railroads by putting one-third of the mileage into Bankruptcy and another one-third on the brink of bankruptcy. Soon rail service will be seriously impaired and the shipping public will begin to suffer. The United States Senator who first offered government ownership as a solution, then advocated "putting them through the wringer", now would "rehabilitate" the roads with government loans which he would make prior liens on their properties ahead of the savings banks and insurance companies who put the people's savings into railroad securities in the belief they would be given a fair deal. If the Senator and the other politicians can do something to restore business to a more nearly normal basis and relax the government's grip on the roads so they can meet competition the government is subsidizing; if they will give the railroads an even chance, they can rehabilitate themselves. It is more business and traffic they need; more freedom to meet competition. They need to be revalued by taxing au-



thorities at their present day worth and thus relieved of some of their tax burdens.

But the financial situation of the railroads, or at least a majority of them, is so serious they cannot wait for the benefits which would accrue from a change of policy toward them on the part of the government and the public. Inasmuch as their present plight is due, in large part, to the policy the government and the public has maintained toward them it might be the part of wisdom were they tided over by government pending a greater business recovery and their realization of the benefits of a change in the policy, if it comes. I say that because there can be no real and comprehensive business revival until the railroads again are in a position to enter the markets and make somewhere near normal expenditures for steel, coal and other supplies. For instance as far back as 1921 the railroads expended more than half a billion dollars annually for materials and supplies. In 1923 the expenditure was more than a billion dollars. In the early years of this decade these expenditures were not much over a hundred million while last year they were only a quarter billion dollars.

Had they the money today they would be placing orders for hundreds of thousands of tons of rails and the steel mills of Pittsburgh would be busy. Thousands of people now on Relief would have profitable jobs. That would be better for the people and better for the government. The only persons to suffer might be those politicians who want to see the Relief rolls enlarged so as to make more and more people directly dependent on government.

However, inasmuch as any benefit the railroads receive from a change in governmental policy will be indirect and slow, what can be done to prevent many more railroad bankruptcies with the general disastrous effects upon prices not only of all kinds of securities but upon the prices of commodities as well? The general public would be more keenly interested in the situation if it had a full appreciation of the fact that prices of wheat and cotton and corn and cattle and hogs go up or down in a general way with security prices; if they fully appreciated that when billions of dollars of securities in which the people's savings are invested are wiped out the country as a whole is impoverished to that extent and the values of everybody's property and commodities are correspondingly reduced.

With no great hope of prompt and effective aid to the railroads through a radical change in governmental policies toward them there is but one thing left: For railroad managements and their security owners to co-operate in formulating and effectuating plans whereby interest charges may be modified or deferred pending improved conditions. The Baltimore & Ohio has such a plan which, already, has been approved by the holders of more than three-quarters in the aggregate of its securities.

The one real constructive thing Congress might do instantly; which

would occasion its members no political embarrassment, would be to pass a bill facilitating such mutual understanding between the railroad companies and a substantial majority of their security holders; to protect the stockholders and the great savings institutions and insurance companies against the strike actions of a few small holders of securities who acquire them for hold-up purposes and the hi-jacking members of the legal profession who aid and abet them.

I thank you and am very glad to have been here with you tonight.

PRESIDENT: Gentlemen, you have heard the railroad troubles discussed. But does anybody have anything more to say on this subject or to ask about it?

MR. KARL BERG: Mr. President and Fellow Club Members: This is the second time we have had the pleasure and privilege of listening to the Honorable John J. Cornwell in five years, and it is my hope that he will address us again in less time than that.

It is talks of this kind that I feel certain will help the railroads and kindred interests to place their problems correctly before the public, and I think that it is only through such efforts these problems are going to be properly explained. In saying this, I think I express the views of everyone present.

Therefore, I move you, Mr. President, that a rising vote expressing our thanks be extended to the Honorable John J. Cornwell.

PRESIDENT: All in favor of that motion will rise. (A rising vote of thanks to Mr. Cornwell was given at this time).

MR. CORNWELL: Mr. President, I simply want to say to the members of this Club that I profoundly appreciate this compliment.

PRESIDENT: We all have to admit that the Governor is a fearless speaker. I like a man who is fearless and is willing to say what he thinks is right. We have in the room here tonight another man who is just as fearless as TNT. I am going to ask him to rise and take a bow. I think you will all admit, after hearing his name, that he is a fearless man. Mr. Charles J. Margiotti.

(At this point Mr. Charles J. Margiotti stood and took a bow amid applause).

PRESIDENT: Is there anything you wish to say to us, Mr. Margiotti?

MR. CHARLES J. MARGIOTTI: I have listened attentively to Governor Cornwell's address tonight and I am much impressed. As a public official of Pennsylvania, I have known conditions similar to those described by Governor Cornwell. His criticism of the national government applies to our own State government during the last four years. For instance, I recall distinctly that a great effort was made, two years

ago, to pass a train limit bill in this State. Of all the burdens that have been imposed upon railroads, both by our national and our various State governments, this would have been the most unjust of them all. In Pennsylvania alone a train limit law, such as was proposed, would have added an additional burden on the railroads of \$60,000,000 annually. This was a load that the railroads could not stand. If imposed, the railroads could not survive. If the railroads could not survive, labor would be adversely affected. There was absolutely no necessity for a train limit bill. You men in this room know that is true.

The entire matter came to my attention as the Attorney General of the State. I studied the bill carefully and I did not hesitate to appear in protest before the Senate Committee having charge of the bill. Probably this is the only time the Attorney General of Pennsylvania ever took such action. I urged the Senate Committee not to pass the train limit bill. I pointed out that the bill was confiscatory and unconstitutional. Such a law would have harmed the railroads and in turn hurt the employees of the railroads.

Representatives of the Railroads Brotherhood also appeared before the same committee. I believe the legislative representatives of the Brotherhoods saw the injustice of the bill. Their support waned and the bill was never reported out.

Later, the Pennsylvania legislature passed a Full Crew Bill. A test suit on the constitutionality of this Act has been heard for the last two years before the Dauphin County Court. As Attorney General of the State, in the performance of my duty, I participated in the defense of the bill and its constitutionality before the Dauphin County Court and the Supreme Court of Pennsylvania. On account of my official position in the litigation I believe it improper to express myself on the merits of this legislation. The Supreme Court of Pennsylvania had several years ago declared a similar bill constitutional. Full crew bills are generally considered constitutional. If, however, they are so drastic that there is no reasonable relationship between the means employed and the end to be accomplished—then they go beyond the police power and are unreasonable and unconstitutional. The Dauphin County Court is seeking to determine as a matter of fact whether the present Act, under present railroad conditions and progress, is reasonable.

I agree with Governor Cornwell in his statement that "the difficulty today is that business does not have confidence in government".

Years ago our government was controlled by a political group that believed in catering to a few rich people. That system was wrong because it permitted the rich to run the government from behind closed doors and because it ignored the general public and labor. It closed the doors to them.

Then, there came another group to control the government of the United States and that group is in power today. That group



listens not to the rich but to a few crackpots, a few theorists and a few so-called representatives of labor. It has closed the door completely on business, big and small, the public and certain labor groups. This system is wrong, too. Neither of the two political groups I have mentioned is correct. Both forget that the country belongs to all. Both forget that the country belongs to the rich and the poor, the working people and the business men—to the railroads' security holders and other holders—it belongs to us all. Every person—every group—is entitled to fair play. Fair play is what was intended by the founders of our government. Our forefathers did not intend that our government should counsel with one group of people to the exclusion of another. Where that occurs there is bound to be lost confidence. Business does not trust labor or government. Labor has lost confidence in government and business. Government has lost confidence in labor and business.

We can never work out of the depression—business cannot be restored—real jobs cannot be created—without a restoration of co-operation between government, business and labor, and government must lead the way.

While I was Attorney General, I was named by the Governor as Chairman of the Social Security Committee. The duty of this committee was to recommend Social Security Legislation to the Governor. You would expect, in a matter of such importance, labor and industry would have equal representation on that committee. Yet I found John Phillips, President of the American Federation of Labor in Pennsylvania; Lieutenant Governor Thomas Kennedy, International Vice President of the United Mine Workers and the C. I. O.; George Rowand, of the Railroad Brotherhoods; Roger Dever, attorney for the United Mine Workers in the anthracite regions in Pennsylvania, and Ralph Bashore, who did not know much about Social Security or any other kind of security,—making up the personnel of the Committee. Their advice was generally followed on how to spend the business man's money in social security and yet there was not a business man on that committee. I don't believe that there was a man on that committee outside of myself who had ever been required to make up a payroll. I do not criticize any of the individuals on the Committee. They are all good men—good labor representatives—interested in their own cause. But I do say that business should have had representatives on the committee. I asked the Governor to place business men on the committee, but this he refused to do. In order to overcome the situation I consulted business men in order to get their views and, thereafter, transmitted them to the Committee. This was very unsatisfactory, although I did the best I could. Business, of course, was not given fair play.



No wonder business leaders lost their confidence in Pennsylvania's government.

They lost confidence because they knew they were not being consulted and that they were burdened by tax legislation that was confiscatory. They did not know what to expect next. They had no voice in legislation which vitally affected them. They knew too well that certain leaders of our country and State ignored business and ignored men who had years and years of experience in providing payrolls for their employees. The advice of theorists and crackpots was preferred.

Until such time as business loses this distrust, we will not have prosperity. Governor Cornwell said the time would not be too distant when confidence would be re-established in the business of the country. That time is coming.

Events of the past five or six months show that Governor Cornwell was right in his prediction.

PRESIDENT: Mr. Margiotti has told you the truth that this was not prearranged. He did not know a thing about it and neither did we.

We have another gentlemen here tonight, one who is a high executive in the railroads, Vice President and General Manager of the Bessemer and Lake Erie Railroad, Mr. F. I. Snyder. I will ask Mr. Snyder if he will say a few words to you.

MR. SNYDER: I appreciate very much having heard the Governor tonight. I think it was a very constructive speech and was deeply interested in all he said.

PRESIDENT: Now, gentlemen, I want to thank you all for your attendance and again remind you of the invitation to meet with the Engineers Society of Western Pennsylvania in the William Penn Hotel at eight o'clock on Wednesday evening, February 15, to listen to the address of Mr. Samuel O. Dunn. We all have an invitation to attend.

There being nothing further for discussion, we will declare this meeting adjourned.

(There being no further discussion, on motion, the meeting was adjourned to the lunch table).

J. D. CONWAY, Secretary.

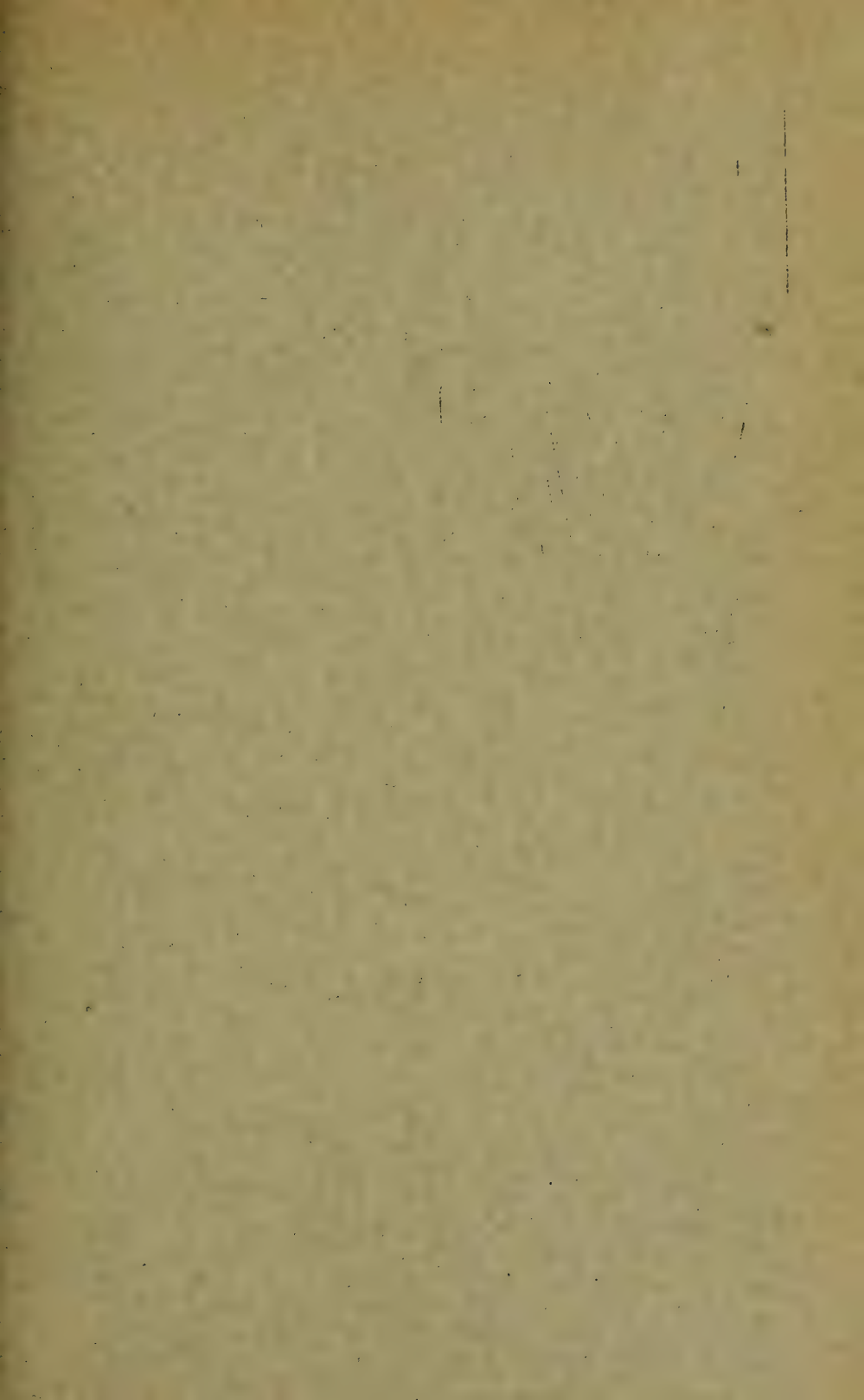
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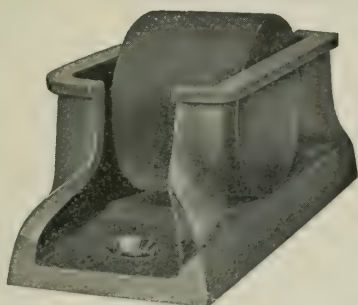
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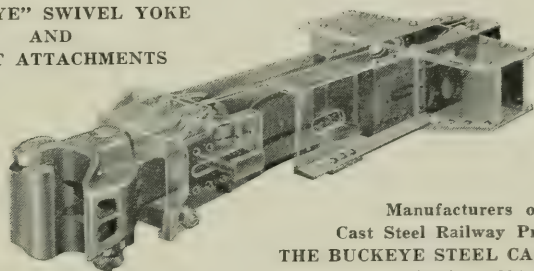


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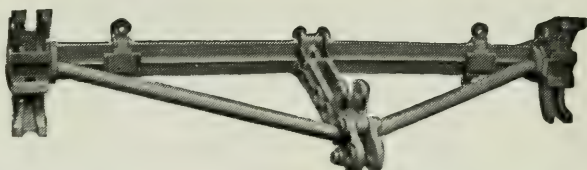


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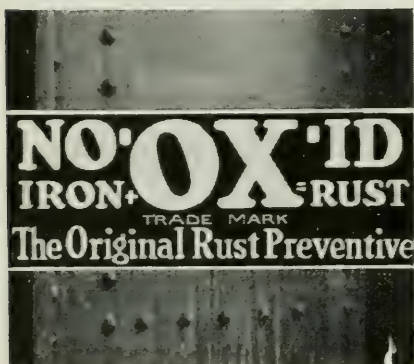


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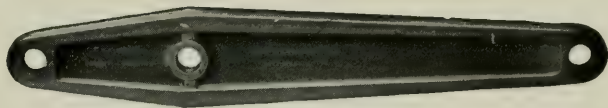
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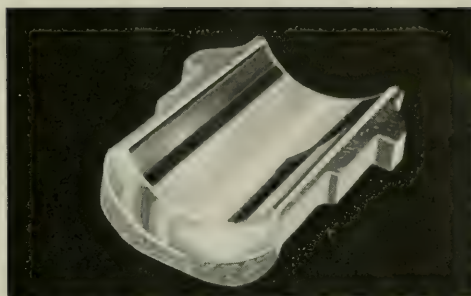
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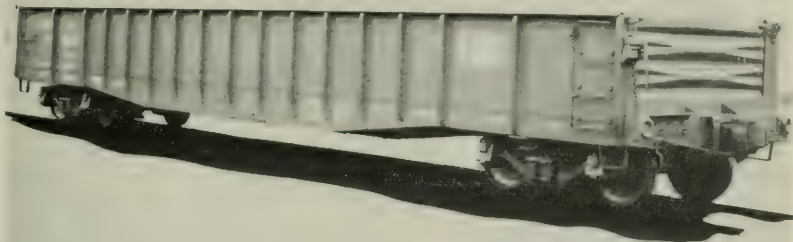
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NOTE—This form to be filled out in full by typewriter or printed and mailed to J. D. Conway, Secretary, 1941 Oliver Building, Pittsburgh, Pa. Membership fee, including dues, is \$3.00 for each fiscal year or part thereof, except those proposed in September or October. Those proposed in those months will be credited upon payment for the following fiscal year. Dues are payable in advance.

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# OFFICIAL PROCEEDINGS

OF

## The Railway Club of Pittsburgh

Organized October 18, 1901

Vol. XXXVIII  
No. 4

**Pittsburgh, Pa., Feb. 23, 1939**

\$1.00 Per Year  
25c Per Copy

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 C. W. GOTTSCHALK, Asst. Traffic Manager, Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

## PAST PRESIDENTS

|                       |                    |               |
|-----------------------|--------------------|---------------|
| *J. H. McCONNELL..... | October, 1901, to  | October, 1903 |
| *L. H. TURNER.....    | November, 1903, to | October, 1905 |
| *F. H. STARK.....     | November, 1905, to | October, 1907 |
| *H. W. WATTS.....     | November, 1907, to | April, 1908   |
| *D. J. REDDING.....   | November, 1908, to | October, 1910 |
| *F. R. McFEATERS..... | November, 1910, to | October, 1912 |
| *A. G. MITCHELL.....  | November, 1912, to | October, 1914 |
| *F. M. McNULTY.....   | November, 1914, to | October, 1916 |
| *J. G. CODE.....      | November, 1916, to | October, 1917 |
| *D. M. HOWE.....      | November, 1917, to | October, 1918 |
| *J. A. SPIELMAN.....  | November, 1918, to | October, 1919 |
| H. H. MAXFIELD.....   | November, 1919, to | October, 1920 |
| FRANK J. LANAHAN..... | November, 1920, to | October, 1921 |
| *SAMUEL LYNN.....     | November, 1921, to | October, 1922 |
| *D. F. CRAWFORD.....  | November, 1922, to | October, 1923 |
| *GEO. D. OGDEN.....   | November, 1923, to | October, 1924 |
| A. STUCKI.....        | November, 1924, to | October, 1925 |
| *F. G. MINNICK.....   | November, 1925, to | October, 1926 |
| G. W. WILDIN.....     | November, 1926, to | October, 1927 |
| E. J. DEVANS.....     | November, 1927, to | October, 1928 |
| W. S. McABEE.....     | November, 1928, to | October, 1929 |
| E. W. SMITH.....      | November, 1929, to | October, 1930 |
| LOUIS E. ENDSLEY..... | November, 1930, to | October, 1931 |
| *JOHN E. HUGHES.....  | November, 1931, to | October, 1932 |
| F. I. SNYDER.....     | November, 1932, to | October, 1933 |
| C. O. DAMBACH.....    | November, 1933, to | October, 1934 |
| R. H. FLINN.....      | November, 1934, to | October, 1935 |
| R. P. FORSBERG.....   | November, 1935, to | October, 1936 |
| E. A. RAUSCHART.....  | November, 1936, to | October, 1937 |
| G. M. SIXSMITH.....   | November, 1937, to | October, 1938 |

\*—Deceased.

Meetings held fourth Thursday of each month except June, July and August.

# PROCEEDINGS OF MEETING

**FEBRUARY 23, 1939**

The meeting was called to order in the Fort Pitt Hotel at 8:00 o'clock p. m., with President J. D. Beltz in the Chair.

Registered attendance 185, as follows:

## MEMBERS:

|                     |                      |
|---------------------|----------------------|
| Allen, Earl M.      | Gillespie, J. Porter |
| Angel, A. J.        | Glaser, J. P.        |
| Bagaley, W. W.      | Griest, E. E.        |
| Barr, H. C.         | Groves, W. C.        |
| Bauer, F. C.        | Haller, Nelson M.    |
| Beam, E. J.         | Hamilton, W. H.      |
| Bell, Charles W.    | Hammer, Charles F.   |
| Beltz, J. D.        | Hayward, C.          |
| Bender, H. P.       | Heed, H. L.          |
| Berg, Karl          | Heer, Walter         |
| Beswick, R. M.      | Hengst, Guy E.       |
| Blyth, F. G.        | Hicks, E. S., Jr.    |
| Bone, H. L.         | Hilstrom, A. V.      |
| Britt, T. E.        | Hunt, Lawrence       |
| Brown, E. F.        | Jados, Walter T.     |
| Buffington, W. P.   | Jarres, F. A.        |
| Carr, T. W.         | Johnson, R. N.       |
| Chaffin, H. B.      | Kemble, T. J.        |
| Chase, D. K.        | Kentlein, John       |
| Cipro, Thomas       | Koch, Edward J.      |
| Conway, J. D.       | Kromer, Walter W.    |
| Coombe, A. B.       | Kroske, J. F.        |
| Dambach, C. O.      | Lanahan, Frank J.    |
| Davis, C. L.        | Lesko, Andrew        |
| Davis, Charles S.   | Lewis, Benjamin      |
| Dean, E. E.         | Little, S. G.        |
| Dehne, George C.    | Lockard, W. N.       |
| Devlin, J. C.       | Long, R. M.          |
| Dugan, G. R.        | Lytle, L. J.         |
| Dunham, C. W.       | Maliphant, C. W.     |
| Endsley, Louis E.   | Millar, C. W.        |
| Emery, E.           | Miller, S. H.        |
| Fair, J. M.         | Misner, George W.    |
| Faustman, Paul L.   | Mitchell, W. S.      |
| Finger, P. E.       | Morgan, Homer C.     |
| Fisher, Earl H.     | Morrison, R. A. J.   |
| Flinn, R. H.        | Mullett, D. D.       |
| Foard, E. A.        | Mulvey, J. I.        |
| Frauenheim, Pierce  | McHail, J. L.        |
| Friend, E. F.       | McHugh, C. A.        |
| Furch, George J.    | McIntyre, R. C.      |
| Galbraith, James R. | McKinley, John T.    |
| Gardner, George R.  | Nagel, James         |



Paisley, F. R.  
 Pickard, S. B.  
 Pitcher, C. C.  
 Posteraro, S. F.  
 Rauschart, E. A.  
 Reagan, Henry V.  
 Renshaw, W. B.  
 Reynolds, D. E.  
 Robertson, A. S.  
 Rudisill, D. E.  
 Rupp, E. S.  
 Rushneck, G. L.  
 Schadt, A. D.  
 Schako, E. J.  
 Schiller, John  
 Searles, E. J.  
 Sekera, C. J.  
 Shellenbarger, H. M.  
 Sheridan, T. F.  
 Shingledecker, J. C.  
 Sixsmith, G. M.  
 Snyder, F. I.

Stevens, L. V.  
 Staats, Kenneth A.  
 Stoffregen, Louis E.  
 Stype, W. G.  
 Sutherland, Lloyd  
 Sylvester, H. G.  
 Terkelsen, B.  
 Teskey, Dr. Walter J.  
 Tracey, J. B. A.  
 Tryon, I. D.  
 Unger, Dr. J. S.  
 Urtel, E. J.  
 Utzler, E. S.  
 Vollmer, Karl L.  
 Vowinkel, Fred F.  
 Walter, E. R.  
 Wilson, Walter H.  
 Winslow, S. H.  
 Woodward, R.  
 Wright, John B.  
 Wyke, J. W.  
 Yarnall, Jesse

Yohe, J. K., Jr.

#### VISITORS:

Bagaley, R. P.  
 Bagaley, Robert F.  
 Bearinger, R. W.  
 Bonner, L. W.  
 Breckling, E. N.  
 Cordell, G. H.  
 Cotterel, S. M.  
 Cotton, C. S.  
 Craig, Frank S.  
 Crittenden, P. L.  
 Cunningham, H. L.  
 Dankmyer, F. C.  
 Davis, William B.  
 Dean, G.  
 Doering, R. J.  
 Emsheimer, Louis  
 Entrikin, L. F.  
 Farbocher, J.  
 Freiland, Gerard  
 Hahn, H. A.  
 Hemma, Charles H.  
 Kahaneji, John  
 Lewis, S. B.  
 Logan, W. J.  
 Lynch, Louis E.  
 Moeller, F. J.  
 Moeshberger, F. N.

Morgan, C. J.  
 McGael, William J.  
 Nagel, James, Jr.  
 Niclout, Maurice  
 O'Hagan, J. E.  
 Phillips, W. H.  
 Robinson, H. J.  
 Rodgers, Edwin  
 Rodgers, Joseph W.  
 Rodgers, Mrs. J. W.  
 Simpson, I.  
 Street, C. K.  
 Stewart, E. P.  
 Thomas, C. Vernon  
 Trautman, Miss Marie  
 Trumpeter, W. C.  
 Tudball, J. H.  
 Vandivort, R. E.  
 Vollmer, Paul F.  
 Vowinkel, Fred J.  
 Walthers, G. W.  
 Ward, N. H.  
 Watson, A. J.  
 Willard, P. F.  
 Williams, W. S.  
 Williams, William  
 Zimmerman, Fred

PRESIDENT: Gentlemen, we will dispense with the roll call, as

usual, and also with the reading of the minutes of our previous meeting. There has been some delay in issuing the printed proceedings due to some information not being complete, but they will be in your hands soon. Are there any proposals, Mr. Secretary?

**SECRETARY:** Mr. President and gentlemen, we have the following proposals for membership:

Devlin, J. C., President, Devlin Electric & Construction Company, 206 Stanwix Street, Pittsburgh, Pa. Recommended by John Kentlein.

Kromer, Walter W., Draftsman, H. K. Porter Company, 108 Tenth Street, Aspinwall, Pa. Recommended by John Kentlein.

Mulligan, H. J., Sales Engineer, Southern Wheel Company, West Homestead, Pa. Recommended by Lloyd Sutherland.

Prindle, H. W., Manager, Railway & Mine Sales, Bethlehem Steel Company, 1216 Oliver Building, Pittsburgh, Pa. Recommended by J. D. Conway.

**PRESIDENT:** The names which the Secretary read will be passed upon by the Committee and these gentlemen will become members of the organization. We will be very glad to have them.

**MASTER EDWIN RODGERS**, 11 years old, and whose father is an employe of the Bessemer and Lake Erie Railroad, will sing for us at this time.

Several songs by Master Rodgers were rendered and enthusiastically received by his audience.

**PRESIDENT:** Master Edwin, Mr., Mrs. Rogers and Miss Trautman, we wish to thank you. We compliment Mr. and Mrs. Rodgers on having such a fine son. We have been very much entertained by his vocal selections.

The meeting will now be turned over to Mr. John B. Wright, Chairman of the Subject Committee, who will introduce the speaker.

**MR. JOHN B. WRIGHT:** The Subject Committee has tried to find a subject which would appeal to as large a number as possible and, having in mind the great number of people who will attend the World's Fair this summer, we appealed to the World's Fair Commission to give us a man who could tell us how they will handle the railroad transportation of people in and out of New York. In addition, we thought it would be very interesting to know something about the World's Fair ourselves, and, being railroad men, we might try to get as large a number of people as possible to attend the Fair, because every person who attends will help the railroads. The Commission selected a man on their own staff, who also happens to be a railroad man, and we are very fortunate in having Mr. C. Vernon Thomas, Special Representative, Public Relations Department of the Baltimore and Ohio Railroad Company, of Baltimore, Maryland, who will present this subject. As a part of his presentation, there will be shown lantern slide views of some of the many wonderful buildings and exhibits at the Fair.

Following Mr. Thomas' paper, we are to be favored—through the kindness of Mr. Frank Snyder—with a sound picture prepared by the

Association of American Railroads, which will tell in graphic manner the railroad's story of the transportation problem. I have had the privilege of seeing this picture and can assure you it is well worth seeing. Gentlemen, I take pleasure in introducing to you Mr. C. Vernon Thomas.

## **TRANSPORTATION IN THE METROPOLITAN DISTRICT IN CONNECTION WITH THE NEW YORK WORLD'S FAIR**

By C. VERNON THOMAS, Special Representative, Public Relations Department,  
The Baltimore & Ohio Railroad Company, Baltimore, Md.

First, let me thank you for your very kind invitation to visit with you tonight, and for the opportunity and privilege of presenting to you a brief description of the New York World's Fair of 1939.

The New York exposition covers an area of 1,216½ acres, is 3½ miles long and a mile wide. Representing a total investment of more than \$155,000,000, the Fair exceeds by far all similar undertakings of the past. Surveys indicate that at least 60,000,000 persons will visit the exposition this summer. The mean daily average attendance at the exposition is estimated at 300,000, with peak throngs of 1,000,000 for major holidays.

The Fair has been divided into the following five general or main zones: Main Exhibit Area, Transportation, Court of States, Foreign Zone, Amusement Area.

The heart of the entire exposition is the Perisphere and Trylon, called the Theme Center, located in the main exhibit area. The huge gleaming white globe, or Perisphere, is 200 feet in diameter and rises eighteen stories above the ground. The 700-foot triangular spire, or Trylon, will be used as the Fair beacon and broadcasting tower, and the entrance to the Perisphere.

Six focal exhibits will serve as keys to the commercial exhibits in each main division of the exhibits area. These focal exhibits will sum up and explain the meaning and significance of what lies around the visitor in that particular zone. The main focal exhibit, or Theme exhibit of the Fair, will be housed within the Perisphere, and is entitled "Democracy," or "The City of Tomorrow." This model of the planned community of the future, one of the largest ever built and the first to portray a full-sized metropolis, complete in every detail, is really a key to the message the World's Fair conveys.

Extending from the Theme Center to the Lagoon of Nations is Constitution Mall, the Fair's magnificent central esplanade. For more than half a mile, the Mall extends from the Theme Center. Rows of great shade trees parallel its course; beds of flowers lend a note of gayety; velvety lawns and trim hedges give it design; lagoons, waterfalls and fountains add life and motion. These, and the imposing buildings which line the Mall, form a fitting background for the sculpture,



murals and reliefs which greet you on every hand. At the end of the first water panel Constitution Mall opens on to Washington Square. Dominating the Mall at this point is a 65-foot statue of George Washington as he appeared in New York on April 30, 1789, to take the oath of office as First President of the United States. The Mall proper terminates at the Lagoon of Nations, linking the main exhibit area to the government and foreign zone. At 9:30 P. M., the Lagoon of Nations is to be the stage for nightly spectacles. In this unparalleled exhibition, water, fire, color and sound are combined for the first time in the play of super-fountains. Beyond the Lagoon of Nations the United States Government and foreign nations' exhibit buildings flank the imposing Court of Peace.

Day after day throughout the Fair period the Court of Peace will be the stage for colorful pageants and parades. Each participating nation has been assigned one or more days for celebrating national events. States of the Union taking part in the exposition also have their special days. In addition, the Fair has reserved various National holidays and particular occasions for impressive celebrations. Dominating the Court of Peace and the three-score nations assembled about it is the United States Federal Building.

Perhaps no major section of the Fair better illustrates the tendency toward improved relations than the Foreign Zone. Never in history have 62 foreign nations assembled in one restricted area to make a peaceful display of each nation's contribution to civilization. Travelers will find in the Foreign Zone a realization of their ambition for a "Tour of the World."

Midway between the Foreign Zone and the Amusement Area is the Court of States. Thirty-eight states and one possession, Porto Rico, are committed to take part in the Fair. Eleven of these occupy individual pavilions, the others being housed in Court of the States buildings erected by the Fair. Pennsylvania houses its exhibit in a replica of Independence Hall in Philadelphia. The north facade of the building forms a broad semi-circular terrace, which commands a full view of the Lagoon of Nations, where at night the spectacular super-fountain displays are staged. New York State and New York City make the only contribution to the Fair which will survive after the exposition closes and the large tract is transformed into a municipal park. New York State's actual participation in the Fair, however, is represented by a permanent amphitheater on the north end of Fountain Lake, with a capacity of 12,500 persons and which with exhibits represents a cost of \$2,000,000. The theater is to have an island stage and the curtain is to be a sheet of water shot up from the lake. Beneath the amphitheater are rooms for a variety of exhibits. The New York City building is built with the intention of turning it into a recreation center for the future park. To this end the huge hall, measuring 400 by 120 feet, without central sup-



ports, has been equipped for an indoor ice hockey rink, tennis courts, badminton, and other athletic games.

Extending along the eastern shore of Fountain Lake and joined by a mile-long loop of roadway, are the 280 acres devoted to amusement. It is expected that the Fair will contain something like 3,000 concessions. A complete "World for Children" will occupy seven acres, between the main exhibit section and the Amusement Area. Here parents may leave their children, assured that they will be under the most careful and competent supervision.

The Transportation Zone focal exhibit will show the evolution of transportation from its most primitive foot travel to interplanetary rocket ships of the future, and will sound the keynote for the entire transportation section. As the visitor enters he will see a great map of the world, 120 feet wide and 40 feet high. On each side of the map, which also will serve as a motion picture screen, will be a large compressor. In front of the map will be the rocket port, and above, the planets. Lights will be dimmed and the two compressors will start slowly, accompanied by a subdued beat or throb. Across the map-screen, hundreds of bare and sandal-clad feet, projected by motion pictures, will march, the sound of footfalls mingling with the beat of the compressors. Jeweled lights will show on the map how far primitive man could travel by foot in a week. The scene changes to the next episode and galley ships ply across the screen, and the lights show the distance the early ocean craft could traverse. The jeweled lights lengthen as man is shown discovering faster transport by camel, the wooden wheel, the chariot and the Viking sail ship. Transportation now has been developed until man can travel 350 miles in a week. The covered wagon follows, then the stage coach and the pony express, until the clipper ship increases the distance to 1,500 miles in a week.

Progress speeds up in the next episode with the automobile, the train, the modern steamship, the Zeppelin and, finally, the airplane. The jeweled lights extend entirely across the world map, indicating that man now may go completely around the globe in a week. And then follows the stirring climax. Twinkling signals, the hum of gigantic motors and the wail of warning sirens signalize that the rocketship is taking on passengers for Mars, or some other planet. Futuristic, streamline liners and trains, taxis and automobiles whisk voyagers to the rocketport and high speed elevators rise and fall as the interplanetary ship is serviced. Then—after a slight pause—there will be a spoken command, a brilliant flash, and the rocket will be off.

The railroads recognize and welcome the opportunity that the New York World's Fair of 1939 gives them to tell to the people their story, not only the story of what they have accomplished to help bring the nation to its present greatness, but what they are doing to improve rail transportation for the World of Tomorrow. To tell the story of the

American railroad in fullest possible fashion, the Eastern Presidents' Conference, comprising 27 of the principal roads east of Chicago and St. Louis, have planned in a big way for their participation. Their million-dollar building will be the largest on the Fair site—1,400 feet in length and 110 feet in breadth—providing approximately 140,000 square feet of floor space. Never before at any of the great world's fairs has the railroad industry as a whole sought to show, and to show fully, its unique and marvelous service and development. It is indeed a large task. At the New York Fair it requires 17 acres and the great exhibit building. "Railroads" at the New York World's Fair is a world's fair in itself. To enable the visitor better to see and understand this stupendous exhibit, it has been divided into three major offerings, each a complete show.

**First.—Railroads in Building—The Story of Railroad Construction.**

The main feature of the Railroad equipment and supply industry will be a mammoth scenic diorama, in form a mountainous landscape, 80 feet wide by 28 feet high, on which will be shown the building of railroads from the forest clearing for a right-of-way to the completed system. Space of 10,000 square feet will be devoted to this exhibit.

**Second.—Railroads at Work—The Story of Railroad Operation.**

To form this picture of a typical American railroad, a scale-model 160 feet in length and 40 feet in depth, with 3,800 feet of track and 50 locomotives and 400 cars, is being built in an enclosure seating 1,000 persons. In this auditorium, once each hour, there will be enacted an entire day's operations of a modern railroad—terminal services, both freight and passenger; the arrival and departure of through trains and suburban trains; and the always fascinating picture of a classification yard. The yard tracks will include receiving yards, hump yards, round house, car repair shops, transfer table, coaling station, water tanks and power house. The coal line will demonstrate the complete handling of coal from the mine head in the mountains to the car ferry, which will float the train over a river of real water 35 feet wide, to the terminal and from there be hauled to a rotary car dump and automatically dumped into the hold of a steamship, which heads out to sea. The entire trackage will be under the control of three dispatchers, with interlocking machines located in the spectator gallery. Color signals will be used throughout, the power and signal wiring involving 3,900,000 feet of wire. Further idea of the size of the diorama may be had from the fact that its forested areas will contain over 6,000 individual trees, its cities, towns, villages, and farms over 1,000 separate buildings, dozens of industrial plants, bridges, etc. Its 3,800 feet of trackage will require 70,000 miniature railway ties and 280,000 tiny spikes to lay. Its lakes, rivers, waterfalls and ocean will utilize over 7,000 gallons of water circulating through electric pumps. Paul Penhune, railroad engineer, is the designer and director of this scenic exhibit.



### Third.—Railroads on Parade—The Romance of the Railroad.

Edward Hungerford, pageanteer-extraordinary to the railroads, author and creator, will review in pageant form, in sixteen rapid-fire scenes, transport development in America from the days of the pioneer, the covered-wagon and the stage coach, to the latest streamlined Mogul of the rails. Historic ships and steamboats, in life-size models, will also re-enact the parts they played in this epic achievement. The great spectacle will be presented on an outdoor stage, or series of stages, 250 feet wide by 100 feet deep. The forestage will provide broad highways for vehicular traffic and standard railway tracks for the parade of locomotives and coaches, ancient and modern; the stage proper for a performing cast of 200; and in the rear a channel for the review of early watercraft. Including backstage,  $5\frac{1}{2}$  acres will be needed. The amphitheater for viewing the performance will seat an audience of 4,000. It will be a big scale production, geared and visioned to the greatest of all World Fairs, for a railroad exhibit estimated to cost anywhere from three to five million dollars. Track extending 5,500 feet will be required for the movement and siding of locomotives and trains used in the show. The problem of presenting open-air drama on such a gigantic scale has been solved by some of the most ingenuous light and sound effects ever offered in any theater. The entire dramatic spectacle moves to music especially composed for it by Kurt Weill. Railroads on Parade will be presented four times daily, at 2:15 and 4:15 each afternoon, and 7:15 and 9:15 each evening, during the progress of the Fair.

In addition to these three major divisions of "Railroads" at the New York World's Fair, many others hardly less in extent are also outstanding features of this widespread exhibit of American rail transport. For instance, the largest steam locomotive in the world, standing on a masonry foundation and running at full speed, 130 feet in length and weighing 519 tons, with its 8 drivers and its 7,000-horsepower pulling capacity, represents an advance step in railroading, amazing to the layman and the railroader alike. This new super-giant locomotive is the last word in American rail progress.

More than one-third of the seventeen acres of "Railroads" at the New York World's Fair is given over to 4,500 feet of track, upon which will be displayed the newest locomotives and trains from all corners of the world. England is sending her latest, the London, Midland and Scottish Railway's "Coronation Scot," seven coaches and a magnificent locomotive. Italy proffers an all-electric train, 525 feet in length and capable of easily running 120 miles an hour. Poland, Russia and France, and Switzerland, are planning to send rolling stock. There will be locomotives, passenger and freight cars of highly modern design. Pullman Company and E. G. Budd will show their latest cars. To top it all, American builders and American railroads will vie with one another and

the creators of the great trains from overseas in presenting the finest of locomotives and cars, including the latest development in both.

No railroad man will want to miss "The Yard," a faithful full-size reproduction of an old-time passenger station and its surroundings, in which will stand such noble and historic engines as the English-built "John Bull" which was sent to America in 1831 and went into service across New Jersey; the graceful "Daniel Nason" (1844), the "Ross Winans" (1845) and the "J. C. Davis" (1875), whose whistles were wont to wake the Maryland hills; the famous "General," which won its spurs in a most dramatic episode of the Civil War; the narrow-gauge engines from Colorado; the picturesque little "Bowker" from California; and the "999" which once made a world record, and still others. This remarkable outdoor exhibit will be supplemented by an indoor historical collection of prints and models and appliances arrayed and sponsored by the Railway and Locomotive Historical Society.

One of the national chain of Childs Restaurants, seating 1,200 persons, will be located in the Railroads' exhibit.

Now, we come to, as previously mentioned the 60,000,000 admissions to the Fair that are expected to be paid. This means that 20,000,000 persons will converge on New York City and will visit the exposition an average of three times. Of these, 15,000,000 will come from without New York City. Railroads, auto buses and automobiles will account for almost 97 per cent of this total. Ships and airplanes will bring the remaining 3 per cent, or approximately 500,000, mostly from foreign countries. Extensive transportation facilities, with an hourly capacity of 165,000 persons, will convey visitors to the New York World's Fair. The site is well served by transit facilities and highways. From Manhattan six main highways lead to the Fair. Along the northerly end of the Main Exhibit area runs the Long Island Railroad, handling 20,000 persons per hour. The fare will be 10 cents.

Just north of the railroad are the I. R. T. and B. M. T. rapid transit lines to the grounds. The former station has been enlarged into a three-platform World's Fair Station. Passengers will reach one of the most spectacular entrances of the Fair via an overpass from the Station without descending to the street level. The terminal has capacity for 40,000 persons per hour. Special trains, running over a new express track, will make the trip from Manhattan to the Fair in 25 minutes. Subway fare is five cents. A two-track spur of the Independent Subway System has been run to a specially constructed World's Fair Station located within the Amusement Area, where a capacity of 40,000 persons per hour can be handled. A trolley line also crosses the World's Fair site, with estimated hourly capacity of 15,000. Excursion steamers and private vessels can discharge passengers in the new boat basin in Flushing Bay. Land and sea planes will use North Beach Airport, little more than a mile from the Fair entrance, rehabilitated at a cost of \$30,000,000. Auto-



mobile parking fields are located on the north, south and west sides of the site, with accommodations for 43,000 cars. Estimated hourly capacity 22,000. A huge bus terminal on the west side of the Fair grounds will be used by franchise buses, buses running on schedule from specific points and probably such railroad excursion train movements as are routed from the terminals to the Fair by bus. A charter bus parking field will provide accommodation for 575 chartered buses. Provision has also been made for a taxi terminal and discharge of chauffeur-driven private cars. Estimated hourly capacity of buses and taxis, 28,000. Intramural buses and tractor-train transportation within the Fair grounds, will maintain scheduled service between different points on the site. There will be 100 buses of similar design, constructed so as to give an unobstructed view to all passengers. Each one will handle 120 people at one time, 60 seated and 60 standing. Other concessionaires will operate boats on Fountain Lake, on which one may go from one of the amusement zones to another, or cross the Lake to the Florida exhibit, the Army camp and the parking space on the opposite side. Push-chairs will be operated on the grounds, both by electricity and manual power. In either case the operator of the vehicle will be a certified guide capable of explaining the Fair to his passenger or passengers.

The general admission to the Fair is 75 cents for adults and 25 cents for children. The operating hours of the Fair are 9:00 A. M. to 10:00 P. M. in the exhibit area, and 9:00 A. M. to 2:00 A. M. in the amusement zone. The formal opening of the Fair is April 30th, and it runs for six months, closing on October 31st.

And now, in closing, in line with the theme of the Fair—"Building the World of Tomorrow"—permit me to leave with you this thought:

Isn't it strange that princes and kings,  
And clowns that caper in sawdust rings;  
And common people, like you and me,  
Are the builders of eternity.

To each is given a bag of tools,  
A shapeless mass and a book of rules;  
That each may make, ere time has flown,  
A stumbling block, or a stepping stone.

(Certain portions of Mr. Thomas' address were illustrated with a stereoptican machine and slides thrown on a screen by a projector).

MR. WRIGHT: Thank you Mr. Thomas. We will now proceed with the Voca-Film, with sound recordings, on "The Problems of Transportation," presented by the Association of American Railroads, through the courtesy of Mr. F. I. Snyder, Vice President and General Manager, Bessemer and Lake Erie Railroad Company.

(Whereupon the Voca-Film "The Problems of Transportation" was shown).

MR. WRIGHT: I think you will all agree that this is a wonderful presentation of the railroad's story. If they can only bring that story to the attention of the people in Washington, who are in position to do something about it, it ought to go a long way towards solving our present problems.

We have a number of pamphlets here on the World's Fair, also on the transportation story, which you can take with you when you leave.

The meeting is now open for discussion.

MR. FRANK J. LANAHAN: The subject has been ably presented this evening, and Mr. Thomas has generated in his audience a great desire to attend the big affair in New York. This colossal show will be an epoch in the history of the country, and all of us who have recollections of previous events of this character will want to make individual comparisons. Personally, after imbibing the enthusiasm of Mr. Thomas in his eloquent word picture of what awaits us on Long Island, I am inclined to start preparations right now, to be sure not to miss the multitude of attractions and the historical incidents that beckon visitors in such irresistible manner to New York this summer. May I congratulate you, Mr. Thomas!

The presentation of the picture, "Problems of Transportation" was most appropriate to a body of the character of the Railway Club of Pittsburgh. The rapt attention with which these various scenes were received, was a compliment to the conception and execution of the idea of giving a better understanding to the problems of the railroads as exist today. We who depend upon this great method of transportation for our livelihood, should rejoice that there is coming into play a better feeling of recognition of the vicissitudes that beset this most important industry.

Our President, Mr. Beltz, Mr. Wright and his whole Subject Committee, are to be commended for their lavish entertainment this evening in giving us Mr. Thomas and the World's Fair, as well as Mr. Snyder in the "Problems of Transportation," and delightful little Edwin Rogers with his vocal renditions. For all of these are we most grateful and express sincere thanks to the respective entertainers.

MR. WRIGHT: Before adjourning, I wish to thank Mr. and Mrs. Rodgers for bringing their boy here and to congratulate them on his beautiful voice, as well as on the courageous manner in which he stood before this gathering and performed like a finished artist.

If there is no further discussion, we are ready for a motion on adjournment.

(There being no further discussion, the meeting, on motion, was adjourned to the lunch table).

J. D. CONWAY, Secretary.

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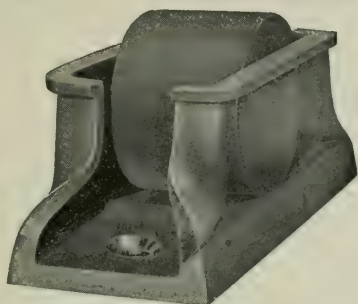
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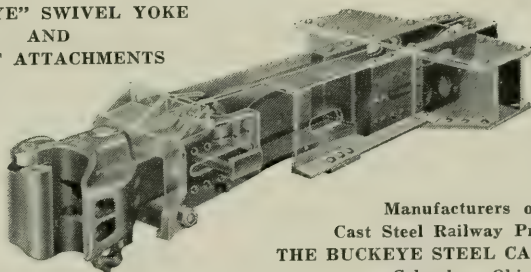


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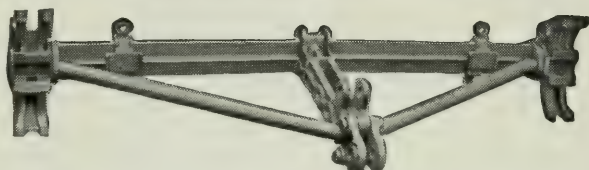
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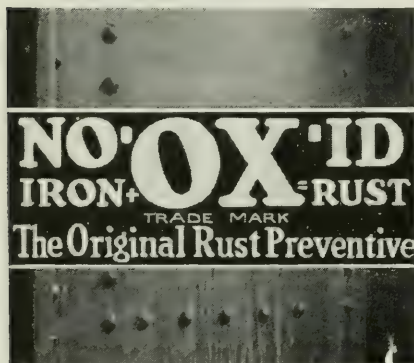
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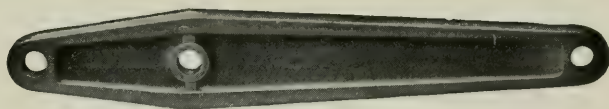
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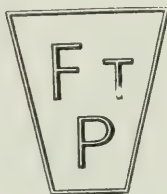
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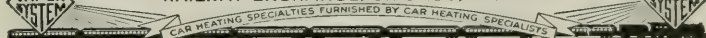
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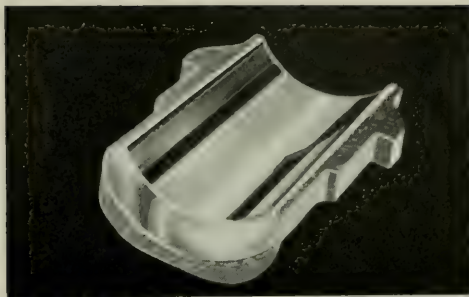
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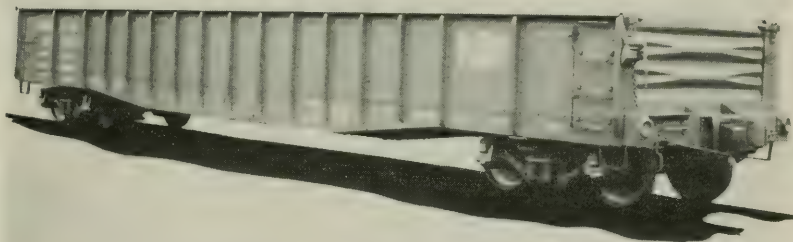
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OFFICIAL PROCEEDINGS  
OF  
The Railway Club of Pittsburgh

Organized October 18, 1901

Vol. XXXVIII  
No. 5

Pittsburgh, Pa., Mar. 23, 1939

\$1.00 Per Year  
25c Per Copy

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## PAST PRESIDENTS

|                  |                                  |
|------------------|----------------------------------|
| *J. H. McCONNELL | October, 1901, to October, 1903  |
| *L. H. TURNER    | November, 1903, to October, 1905 |
| *F. H. STARK     | November, 1905, to October, 1907 |
| *H. W. WATTS     | November, 1907, to April, 1908   |
| *D. J. REDDING   | November, 1908, to October, 1910 |
| *F. R. McFEATERS | November, 1910, to October, 1912 |
| *A. G. MITCHELL  | November, 1912, to October, 1914 |
| *F. M. McNULTY   | November, 1914, to October, 1916 |
| *J. G. CODE      | November, 1916, to October, 1917 |
| *D. M. HOWE      | November, 1917, to October, 1918 |
| *J. A. SPIELMAN  | November, 1918, to October, 1919 |
| H. H. MAXFIELD   | November, 1919, to October, 1920 |
| FRANK J. LANAHAN | November, 1920, to October, 1921 |
| *SAMUEL LYNN     | November, 1921, to October, 1922 |
| *D. F. CRAWFORD  | November, 1922, to October, 1923 |
| *GEO. D. OGDEN   | November, 1923, to October, 1924 |
| A. STUCKI        | November, 1924, to October, 1925 |
| *F. G. MINNICK   | November, 1925, to October, 1926 |
| *G. W. WILDIN    | November, 1926, to October, 1927 |
| E. J. DEVANS     | November, 1927, to October, 1928 |
| W. S. McABEE     | November, 1928, to October, 1929 |
| E. W. SMITH      | November, 1929, to October, 1930 |
| LOUIS E. ENDSLEY | November, 1930, to October, 1931 |
| *JOHN E. HUGHES  | November, 1931, to October, 1932 |
| F. I. SNYDER     | November, 1932, to October, 1933 |
| C. O. DAMBACH    | November, 1933, to October, 1934 |
| R. H. FLINN      | November, 1934, to October, 1935 |
| R. P. FORSBERG   | November, 1935, to October, 1936 |
| E. A. RAUSCHART  | November, 1936, to October, 1937 |
| G. M. SIXSMITH   | November, 1937, to October, 1938 |

\*—Deceased.

Meetings held fourth Thursday of each month except June, July and August.

# PROCEEDINGS OF MEETING

MARCH 23, 1939

The meeting was called to order in the Fort Pitt Hotel at 8:00 o'clock p. m., with President J. D. Beltz in the Chair.

Registered attendance 189, as follows:

## MEMBERS

|                         |                        |
|-------------------------|------------------------|
| Ackley, J. O.           | Foard, E. A.           |
| Adams, Frank W.         | Fralic, C. F.          |
| Ainsworth, J. H.        | Fry, L. H.             |
| Allen, Earl M.          | Galbraith, James R.    |
| Ambrose, W. F.          | Gardner, George R.     |
| Ansman, J. M.           | George, W. J.          |
| Bagaley, W. W.          | Gillespie, J. Porter   |
| Balla, J. A.            | Goldstrom, G. E.       |
| Barr, H. C.             | Greek, Joseph          |
| Beall, C. R.            | Grieve, Robert E.      |
| Beeson, H. L.           | Hammer, C. F.          |
| Beitsch, George F.      | Hancock, Milton L.     |
| Bell, Charles W.        | Hansen, William C.     |
| Beltz, J. D.            | Heer, Walter           |
| Bender, H. P.           | Hess, Charles A.       |
| Berg, Karl              | Hilstrom, A. V.        |
| Binau, R. J.            | Holmes, E. H.          |
| Blyth, F. G.            | Hooper, R. E.          |
| Bone, H. L.             | Irwin, R. D.           |
| Britt, T. E.            | James, J. H.           |
| Buffington, W. P.       | Jarres, F. A.          |
| Campbell, F. R.         | Johnson, J. W.         |
| Carr, T. W.             | Kearfott, W. E.        |
| Cartwright, William E.  | Kennedy, G. N.         |
| Chase, D. K.            | Kohl, C. G.            |
| Clausen, Harold C.      | Kromer, W. W.          |
| Clements, F. C.         | Kromer, William F.     |
| Condon, William H., Jr. | Lanahan, Frank J.      |
| Conway, J. D.           | Larson, W. E.          |
| Coombe, A. B.           | Lee, L. A.             |
| Courtney, H.            | Lewis, Benjamin        |
| Cressler, A. B.         | Little, S. G.          |
| Cruikshank, J. C.       | Livingston, W. C.      |
| Davis, C. L.            | Logan, J. W., Jr.      |
| Davis, Charles S.       | Long, R. M.            |
| Dawson, P. R.           | Lowry, William F., Jr. |
| Dean, E. E.             | Mackall, C. F.         |
| Devlin, J. C.           | Maliphant, C. W.       |
| Diven, J. B.            | Masterman, T. W.       |
| Dunham, C. W.           | Masters, W. C.         |
| Endsley, Prof. Louis E. | Matchett, H. K.        |
| Evans, Charles S.       | Maxwell, R. E.         |
| Farlow, G. B.           | Mayer, L. I.           |
| Ferguson, George        | Miller, John           |
| Forsythe, George B.     | Mitchell, W. S.        |

Morrison, R. A. J.  
 Mowry, James G.  
 Mulligan, H. J.  
 McCully, D. L.  
 McKinley, A. J.  
 McLaughlin, H. B.  
 Pickard, S. B.  
 Pringle, Paul V.  
 Purchard, Paul  
 Reagan, Henry V.  
 Renshaw, W. B.  
 Reiser, Frank  
 Rief, Joseph  
 Roberts, E. L.  
 Rudisill, D. E.  
 Rupp, E. S.  
 Rushneck, George L.  
 Ryan, D. W.  
 Schane, Frank A.  
 Schiller, John  
 Searles, E. J.  
 Severn, A. B.  
 Sheffer, R. W.  
 Shellenbarger, H. M.  
 Sheridan, T. F.

Showalter, Joseph  
 Shull, C. O.  
 Sixsmith, G. M.  
 Stack, John E.  
 Stewart, C. D.  
 Sutherland, Lloyd  
 Sutton, K. B.  
 Taylor, H. D.  
 Teskey, Dr. Walter J.  
 Terkelsen, B.  
 Tipton, G. M.  
 Hautman, Hugo  
 Tudball, J. H.  
 Unger, Dr. J. S.  
 Urtel, E. J.  
 Van Horne, C. F.  
 Van Woert, F. E.  
 Wilson, W. H.  
 Wilt, Howard H.  
 Woodward, R.  
 Wright, J. B.  
 Wyke, J. W.  
 Yarnall, Jesse  
 Yohe, J. K., Jr.  
 Zell, H. A.

## VISITORS

Bagaley, Robert F.  
 Bateman, T. J.  
 Batson, J. F.  
 Brown, B. R.  
 Brueggeman, Edward J.  
 Buerkle, E. C.  
 Byrnes, Carl  
 Byrnes, Charles  
 Clugh, C. I.  
 Curley, J. P.  
 Davis, William B.  
 Drisbach, D.  
 Eaton, Fred'k. H.  
 Ferguson, D.  
 Freeman, J. D.  
 Glen, A. G.  
 Granger, A. W.  
 Gumz, Fred A.  
 Herrington, O. E.  
 Hooker, John S.  
 Johnson, A. C.  
 Joyce, Harry V.  
 Keib, Earl F.  
 Kimmich, K. J.

Leonard, S. B.  
 Lewis, S. B.  
 Lowndes, T. H.  
 Mathews, M. J.  
 Meier, W. F.  
 Melhorn, Charles  
 Niclout, Maurice  
 O'Leary, Daniel W.  
 Penrod, R. E.  
 Phillips, W. H.  
 Reed, John A.  
 Rice, C. W., Jr.  
 Salter, R. L.  
 Schell, R. L.  
 Schmidt, Paul F.  
 Smith, Sion B.  
 Steiner, H.  
 Stewart, E. P.  
 Thomas, M. F.  
 Urban, C. E.  
 Van Wormer, G. M.  
 Vaughan, George C.  
 Williams, R. A.  
 Winlack, George D.

Wolk, William G.

PRESIDENT: Gentlemen, the roll call will be dispensed with as usual. We will also omit the reading of the minutes of the previous



meeting as the proceedings will be in your hands soon. Are there any proposals, Mr. Secretary?

SECRETARY: Mr. President and gentlemen, we have the following proposals for membership:

Ackley, James O., Warehouse Manager, A. M. Iams Company, 325 Oneida Street, Pittsburgh, Pa. Recommended by E. S. Rupp.  
Brown, B. R., Sales Engineer, Southern Wheel Division, American Brake Shoe and Foundry Company, 915 Midland Building, Cleveland, Ohio. Recommended by J. D. Conway.  
Cressler, A. B., Purchasing Agent, P. & W. Va. Ry. Co., 221 Beverly Road, Pittsburgh, Pa. Recommended by E. J. Searles.  
Farmer, C. F., Freight Traffic Manager, B. & O. R. R. Co., Oliver Building, Pittsburgh, Pa. Recommended by W. P. Buffington.  
Irvin, P. J., Supervisor Telegraph and Signals, Pennsylvania Railroad, 28 North Grandview Avenue, Crafton, Pittsburgh, Pa. Recommended by C. M. Wheeler.  
Lambert, William J., Chemist, Pittsburgh Coal Company, 43 Harwood Street, Mt. Washington, Pittsburgh, Pa. Recommended by E. S. Rupp.  
Mackall, C. F., Assistant Train Master and Assistant Road Foreman of Engines, Pennsylvania Railroad, 30th Street, South Side, Pittsburgh, Pa. Recommended by J. S. Gillum.  
Tudball, J. H., Assistant Division Accountant, B. & O. R. R. Co., 327 Michigan Street, Beltzhoover, Pittsburgh, Pa. Recommended by E. S. Rupp.

PRESIDENT: The gentlemen whose names have just been read, after being approved by the Executive Committee, will become members and we will be very glad to have them with us. Do not forget our motto "One Get One". Are there any communications, Mr. Secretary?

SECRETARY: Gentlemen, since our last meeting, we have had notice of the death of two of our members, George W. Wildin, Consulting Engineer, retired, of Westinghouse Air Brake Company, Pittsburgh, Pa., who served as President of this Club from November, 1926, to October, 1927, died on February 28, 1939, and E. A. Blomgren, Lubrication Engineer, The Texas Company, Baltimore, Md., died August 14, 1938.

I have a letter here, Mr. President, from Mr. R. P. Forsberg, Past-President of the Club, that it would, perhaps, be proper to read at this time:

Pittsburgh, Pa., March 23, 1939.

Mr. J. D. Beltz,  
General Superintendent, B. & O. R. R. Company,  
Pittsburgh, Pa.

My dear Mr. Beltz:

It is a matter of deep regret to me that I have been unable to attend the last three meetings of The Railway Club of Pittsburgh and, as I will be out of the city this evening, I will miss tonight's meeting also.

I recall with sincere appreciation the splendid support you gave me during the year I had the honor of acting as President of our Club, and seemingly I have not repaid you in kind.

I assure you that I am as much interested in the affairs of our Club as ever, and I would take especial pleasure in doing anything in my power to aid in making your administration a successful one.

I will make an especial effort to try and so arrange my engage-

ments that I will not be prevented from attending the meetings of our Club during the remainder of your term.

With my kindest personal regards, I am,

Yours truly,  
R. P. FORSBERG.

PRESIDENT: Mr. Secretary, you will please have the proper memorials inserted in the minutes with regard to the deaths of the members whose names you have read.

As you know, we are coming to the season of the year when our attendance at these meetings drops off a little. Let us not get too careless about attendance. We have only two more meetings until Summer arrives and we discontinue these meetings until the Fall, so do not stay away from the next two meetings. We expect to have interesting talks at those meetings. Tonight, the address is on "Chilled Car Wheels". This will be explained to us by Mr. R. L. Salter, Chief Inspector, Association of Manufacturers of Chilled Car Wheels, of Chicago. It is my privilege and pleasure to introduce to you, Mr. Salter:

## **"THE STORY OF THE CHILLED CAR WHEEL"**

By R. L. SALTER, Chief Inspector, Association of Manufacturers of  
Chilled Car Wheels, Chicago, Ill.

Mr. President, Members and Guests of The Railway Club of Pittsburgh: It is a distinct pleasure to come before you tonight to present what we feel is an interesting, instructive and entertaining sound on film story of the Chilled Car Wheel.

The remarkable progress made in sound on film photography has made it possible for industry to bring its technical subjects to the office to show them where they can be inspected under the most favorable conditions.

A sound picture perfectly synchronized with the speaker presents an appeal to the listener that cannot often be obtained by the speaker alone. This is due to the fact that most of us are not good speakers and we are not able to handle the subject in an entertaining manner.

With this thought in mind it occurred to me that the best way to introduce the picture would be to announce the subject with a few remarks pertaining to the contents of the picture. After seeing the announcement of your meeting, my original idea did not appear very appropriate. This has all the earmarks of an alibi and maybe it is, but I do not often have the opportunity to hold the floor for fifteen or twenty minutes without interruption, so I must make the most of the opportunity tonight.

It was originally planned that our director of research, Mr. Vial, would be with you tonight to introduce the picture. I am sorry that

previous arrangements made this impossible. Mr. Vial's ability as a speaker, his intense interest and thorough understanding of railroad problems always earn him a hearty welcome with railroad men.

The first railroad made its appearance in our country early in the 19th century. The manufacture of chilled car wheels started almost simultaneously with the first railroad, and for more than 100 years has supplied wheels for the railroads of the North American continent. The chilled wheel industry is justly proud of this record, and particularly so, for the progressive development of the past few years.

The industry consists of twenty companies operating 48 plants scattered throughout the United States and Canada, and during this year just passed, which was a depressed one from the railroad standpoint, shipped a total of 1,250,000 wheels, which meant the melting and molding of approximately 425,000 tons of iron.

In addition to the members of the Association, there are four railroads that manufacture a part or all of their requirements.

The Association of Manufacturers of Chilled Car Wheels has now been in existence for thirty years. It was originally formed with a very small organization for the primary purpose of acting as a clearing house of information pertinent to the industry. During subsequent years, it has gradually developed into an organization for research and today has a most capable staff and one of the best equipped laboratories which could be devised for the purpose.

Intelligent research has been responsible for the outstanding industrial progress that our country has made.

In our particular industry the field of physical metallurgy has been the means of discovering previously unknown natural laws that control the behavior of the elements of cast iron. Manufacturing methods have been made to conform to these laws in such manner that almost any desirable grade of iron may be obtained simply by changing the iron-carbon relationship.

We have cast iron today that has proved more reliable under fatigue conditions than forged steel. Where ten years ago tensile strength was from 18,000 to 22,000 lbs. per square inch, it is now being produced regularly up to 75,000. 120,000 is not unknown, and even higher values seem possible.

All the research work on chilled car wheels to date has been performed by the Association staff where the many important developments have been truly remarkable, considering the small staff and the amount of routine work that must be handled at the same time.

While much has been done through metallurgy in developing the control of the properties of these metals, the indications are that the surface has not more than been scratched.

Fully realizing this and visualizing the great possibilities for future development, the Association of Manufacturers of Chilled Car



Wheels has entered into an agreement with the Batelle Memorial Institute covering a broad research project which is already under way, and another has been started at the Massachusetts Institute of Technology.

The history of practically every major industrial development shows that the man who made it possible was usually an obscure scientist who through curiosity, was trying to prove some developed theory. It has always remained for some practical scientist years later to take up the principle evolved and through practical research, work out a commercial application. In no case has any scientist been able to visualize the vast commercial world he was creating.

History also shows that the world has always been skeptical of advancement. We think each year we have reached the ultimate and the next year produces for us a new ultimate.

History, therefore, strongly indicates that all of the developed knowledge of man today is infinitesimal compared with that which is still unknown.

We today accept as necessities what yesterday were luxuries and the day before unheard of, and yet the world is still as skeptical toward new developments as it was a hundred years ago.

A very prominent speaker recently made the statement that "what we know today has been catalogued in libraries, it is what we don't know that must be found out to solve the problems that confront us today." To this end, we must depend on the results of practical research.

In 1936, the responsibilities of the Association of Manufacturers of Chilled Car Wheels were materially increased by the unanimous decision of the membership to place responsibility for the actual inspection of product directly in the hands of the Association itself.

The organization of the inspection department occupied the greater part of 1937. By 1938 the actual work was well under way and at the present time 37 of the 40 Association plants in the United States have a full time Resident Inspector who works solely under the direction of the Association.

The inspection system, stated briefly, includes:

- 1st—The inspection of each day's work at the member plants by the Resident Association Inspector.
- 2nd—The preparation of operating and inspection reports of each day's work which are mailed to the Chicago office.
- 3rd—Semi-annual general inspections of all plants by Inspectors who travel out of the Chicago office.

The general inspections cover operating as well as inspection practices and whenever any outstanding irregularity is found, recommendations for correction are made to the company in question. If the necessary correction is not made, the matter is turned over to an executive committee which is presided over by our able president, Mr. F. H. Hardin.



Most of you know Mr. Hardin, and those of you who have worked with him know that he is loyal always to the principle and not to the man. Whatever success this new department has will be due largely to the aggressive leadership of Mr. Hardin.

But to return to the picture. There is always an open invitation by the members of the chilled car wheel industry to visit the industrial plants where, I assure you, you will be welcome. Today, however, that opportunity is not often available; hence the primary object in the production of this picture is to bring the foundry into the office, so to speak, where it can be thoroughly inspected in convenience, comfort, and cleanliness.

The first move in producing the picture was the preparation of a complete story of the chilled car wheel. From this the script was prepared by the producer which, after many conferences and changes, was used as the basis of the photography, all of which was with 35 millimeter equipment.

It was the original intent to produce a 2500 ft. film in the 35 millimeter size which normally would require shooting approximately 4000 ft. of film.

When the entire story was filmed, however, there was a total of 8000 ft. instead of the intended 4000 ft.

The process of editing, which was supervised by members of the Association, reduced this to 4000 ft. after which the off-screen voice was recorded, and the sound track combined with the film. This film has also been made available in the 16 millimeter size for convenience in showing in small rooms.

I recite this procedure to indicate the painstaking care exercised throughout in our effort toward accuracy of reproduction and the presentation of a film of outstanding value.

It would have been easily possible to have produced a film of twice its length but again we would have been bordering on the verge of boredom, and feel that its present length is satisfactory, but in crowding the entire story into twenty-seven minutes, there are still some gaps which have been evidenced by questions at several gatherings where the film has already been shown.

It is to be hoped that you will all feel free after the showing to raise any questions not entirely clear to you and they will be answered to the best of our ability.

While the picture is so arranged as to call for no introduction, it seems wise to briefly review some of the questions which have already arisen in the hope that in so doing, it will lead to a clearer understanding on your part.

Melting temperatures are maintained around 2700 degrees, and pouring temperatures around 2450 degrees, both of which are frequently observed and recorded.

A misunderstanding seems to exist regarding the chill test piece. A chill test piece is taken at intervals of about every five wheels throughout the heat. They are used as a guide to the melter and have a direct relation to the chill in the wheel. For normal carbon iron the chill on the test piece should run about  $1\frac{3}{4}$  inches to produce normal chill in the wheel.

Apparently the most misunderstood section of the picture is in reference to the Unit Type pits shown, which are used for annealing and heat treatment.

These pits represent one of the latest developments of the Research Department of the Association wherein the heat of the wheel itself is utilized for the heat treating process by means of a very highly efficient type of insulation permitting an extremely slow transfer of heat and hence, a predetermined rate of cooling in the wheel itself.

The wheels are pitted at high temperatures and the pits immediately sealed.

The temperature equalizes throughout the wheel well above the critical range. Cooling then begins to take place at the rate of about eight degrees per hour until the critical temperature is reached, when it remains constant until the molecular or metallurgical change is completed, when cooling again occurs at approximately the same rate.

The difference between this new unit pit and the old type sand filled pit may be compared to the difference between a new and an old type thermos bottle. The old thermos bottle, with its earthenware lining had to be heated before being used and so did the old sand filled pit.

Continuous heating and continuous operation of the pit produced temperatures sufficiently high but uniform cooling was very difficult to obtain so the wheels had to be transferred after a specified time to secondary pits.

All of this required very careful supervision. The unit pit does not require heating, no transfer of wheels at high temperatures is necessary, and the difference in temperature throughout the pit can be held within 50 degrees. This produces a uniformity of heat treatment throughout and definitely increases the strength and wearing value of the product.

The first battery of these pits has now been in service for a period of over two years, during which time over 400 such pits have been introduced by the industry, representing 70 per cent of the industry capacity, with the probability that all plants will eventually be equipped.

Although this is an entirely new picture, only recently completed, it is already out of date in two respects. You will see for instance, two recording devices on the cupola as shown in this picture. Since the picture was made, the two machines have been coupled up so that the air volume is automatically controlled to maintain a constant carbon dioxide, thus insuring uniformity of combustion and it has now been

in satisfactory operation for a sufficient length of time to indicate it may become standard for cupola operation.

Incidentally, a thesis prepared on the performance of this machine was recently awarded first prize in an instrumentation contest conducted by the Scientific Apparatus Makers of America, in which there were 70 entrants, three of which were from foreign countries.

While the picture shows the usual means of measuring depth of chill with a scale, a scientific instrumental means has been developed by the Association and is now in effect as a requirement of the Inspection Department, which accurately determines depth of chill and hence, wearing value.

This process was already in effect prior to the taking of the picture but time and space were not available to introduce it in the recording of the picture itself.

These, I believe cover the main points that are not fully described and I sincerely hope that you may not be disappointed, but on the contrary, will thoroughly enjoy this presentation.

(Mr. Salter's talk was followed by a moving picture, with sound recordings, showing the various steps in chilled car wheel manufacture).

PRESIDENT: Gentlemen, we have all enjoyed listening to Mr. Salter's interesting paper and seeing this moving picture explaining the manufacture of chilled car wheels. We are now going to be favored with a paper by Mr. B. R. Brown, Sales Engineer, Southern Wheel Division, American Brake Shoe and Foundry Company, Cleveland, Ohio, on "Recent Progress in the Service Life of the Chilled Car Wheel"; Mr. Brown:

## **"RECENT PROGRESS IN THE SERVICE LIFE OF THE CHILLED CAR WHEEL"**

By B. R. BROWN, Sales Engineer, Southern Wheel Division, The American Brake Shoe and Foundry Company, Cleveland, Ohio.

Having just witnessed the manufacture, inspection, and testing of the Chilled Car Wheel of today, together with certain phases of the research work that has constantly been going on for the past several years, it seems appropriate to ask whether all this effort has produced a better wheel, a safer wheel and a longer lived wheel.

Most of you recall the long-since obsolete double plate wheel that was standard for many years. In early 1928, a national survey of 64,000 scrap wheels, practically all of which were double plates of 40 and 50-ton capacity, was conducted.

The scrap wheels were checked, since we believe the true story of wheel life is best secured from the railroads' scrap pile. Such figures are based on hard practical experience, and are not theoretical in any way, nor restricted to cars of special type or limited service. We might



say, that we go to "the bone yard" for this information. These wheels had been removed from all types of box, open top and refrigerator cars for the various defects listed under the then A.R.A. Rules.

The life, as figured from the date cast to date of removal, was approximately 75 months, or  $6\frac{1}{4}$  years. Since it is generally impossible to secure mileage figures for freight cars, this average life is quite reliable for comparative purposes.

In 1928, the single plate design was adopted as standard because of certain marked advantages—a longer wearing flange, a sturdier rim, and a plate able to resist the heat stresses of prolonged brake applications. These improvements resulted in an average service life for 56,000 wheels scrapped in 1937, from cars of the same types and capacities as those studied in 1928, of 108 months, or 9 years, an increase since 1928 of over 44 per cent—notwithstanding that about 40 per cent of these 56,000 wheels were old double plates and most all the single plates were cast before the recently adopted inspection by the Wheel Association. In addition, as we all know, speed, loading, and car miles per day have increased a great deal since then. The I.C.C. figures for 1928 show the gross ton miles per train hour, exclusive of locomotives, was 23,600, and that for 1937, 30,349, or an increase of  $28\frac{1}{2}$  per cent. This is a "live" figure based on cars actually moving.

With the eventual complete elimination of all double plates, this average life will be well in excess of 9 years. And doubtless in this case, would have been greater for general freight service had it been practical to eliminate the wheels removed from refrigerator service as they made a disproportionately high annual mileage.

A recent survey and check by the A.A.R. Wheel Committee showed that, according to the proportion of wheels in service,  $2\frac{1}{2}$  times more double plates were removed for defects than single plates, 6 to 7 times as many for broken rims, and that it is eight times more liable to cause a derailment than a single plate wheel.

This latter improvement is more than supported by the experience of a large Eastern trunk line, which in 1926 had 86 derailments due to chilled wheel failures, all of which were of course double plates, and in 1938 had only 7, of which but 4 were of the single plate design—and I think we all will agree that the higher speed at which trains operated last year certainly gave the wheels more punishment than in 1926.

As I mentioned before, it is difficult to secure actual mileages for general freight service. However, a large operator of tank cars just recently completed a study of their wheel performance and were able to supply the exact mileage made by each pair of wheels. These cars operate in the oil fields of Oklahoma and in the East over trunk line railroads. The study was made of a new series of cars built, I believe, about 1930—the wheel manufacturer knew nothing of it at all. The general average for all wheels removed for all causes including slid flats,



but excepting cut journals and brake burns, was 120,500 miles—the lowest mileage of any wheels was 44,000, and the maximum was 194,000 miles. As many of the mate wheels of those scrapped were good second-hand, they would have increased this average mileage had it been practical to mount and reapply them to these cars.

A large refrigerator line, some of whose cars accumulate 70,000 to 80,000 miles per year, estimates their wheel life at over 100,000 miles; a large trunk line as substantially in excess of 120,000 miles. Based on an average of 10,000 miles per year for general freight service, these mileage figures all indicate a life of 10 to 12 years for freight service.

Thus we are able to see that the single plate design has performed so much better than the old double plate, and has such a greater average life as to well justify our faith in a wheel of this character and material.

Mr. Salter and the picture have outlined somewhat the research and experimental work that so necessarily must proceed progress. Countless tests of numerous designs have been conducted. Thousands of experimental wheels have been cast and placed in service under various types of cars and tenders.

Out of all this has now come the Unit Type Pit, and the Bracketed Design. Increase in service life of this wheel should equal, if not exceed, that of the single plate over the old double plate.

We soon, then, will be prepared to offer to the railroads the crystallization of all the exploratory research and experimentation of the last several years—Tomorrow's Wheel.

PRESIDENT: Are there any questions any one would like to ask?

QUESTION: What is the difference between single and double plate wheels?

MR. B. R. BROWN: The double plate wheel was a wheel that had two plates between which was a core. One of these was practically straight and the other more or less arched. Due to prolonged brake application, heat stresses occurred at the junction of these two plates, which resulted in a great number of cracked plates at this point. In 1928 the two plates were pushed together and we had a single plate, that is, one plate. This has been standard since 1928. That, briefly, is the difference insofar as design is concerned.

PROFESSOR LOUIS E. ENDSLEY: This brings back to my memory that twenty-five years ago I ran a large series of tests for this Association on chilled iron car wheels. In these tests I measured the stress in the plate of the wheel under different applications of the brake shoe. These tests were made while I was at Purdue University. We tested three wheels and one of these wheels showed up very bad. At that time, in 1924, I recommended to this Association and to the Committee on Wheels of the Railroads that a single plate wheel be tried

because I felt that such a plate would be able to better resist the brake shoe heat. I am glad to know that fourteen years later they adopted it. We also measured the stress during the hot metal test, that is, when they test a wheel by pouring hot metal around the tread. For these tests we mounted gauges on the wheel and read the gauges by a surveyor's level at some distance for fear of breakage if we were close to the wheel. A full report on all of these tests was read by me before the Western Railway Club at Chicago in 1915.

I have enjoyed listening to this interesting paper telling what improvements have really been made.

MR. R. L. SALTER: What this gentleman just said clearly illustrates the point we tried to make in stating that our world is very skeptical of new developments. You recognized the advantages of Single Plate Design 14 years before it was accepted. At that time, if my information is correct, they tested with a one and one-half inch thermal band for two minutes, and got back away from it for fear it would break. At the present time we test with a 4½-inch thermal band for 10 minutes.

PROFESSOR ENDSLEY: Showing the improvement of the single plate used today.

MR. SALTER: Showing the improvement of the Single Plate.

MR. JOHN B. WRIGHT: While we regret that the party mentioned by the speaker as being unable to be here tonight could not be with us, I do not believe the subject could have been handled any more effectively or any more interestingly than it has been tonight. Both men are recognized experts in their line, one having to do with the inspection and tests and the other with the performance in service. I do not know of any more complimentary remark to make about the picture than to say it speaks for itself better than words. As an expression of our appreciation, Mr. President, I move that a rising vote of thanks be extended the speakers.

PRESIDENT: You are requested to rise and give a rising vote of thanks to the speakers.

(At this point a rising vote of thanks was given).

PRESIDENT: We have with us tonight a gentleman who served in this Club since 1901 and who has recorded many proceedings. I would like to have Mr. Sion B. Smith stand, please.

(At this point Mr. Smith stood amid hearty applause).

PRESIDENT: Mr. Smith came here when the Club was first organized and has been a loyal member and familiar figure around here ever since.

Now, gentlemen, I want to thank Mr. Salter and Mr. Brown for the interesting papers and the moving picture they have presented here tonight. Again, before adjourning, let me remind you of our slogan, "One Get One." Let us attend and let us get some members if we can and make this a good Club for many years. If there is no further discussion, we are ready for a motion to adjourn.

(There being no further discussion, the meeting, on motion, was adjourned to the lunch table).

J. D. CONWAY, Secretary.

# **In Memoriam**

**GEORGE W. WILDIN**

**Joined Club April 26, 1918**

**Died February 28, 1939**

**E. A. BLOMGREN**

**Joined Club December 16, 1937**

**Died August 14, 1938**





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By HARRY R. CONDON, Vice President, The Wood Preserving  
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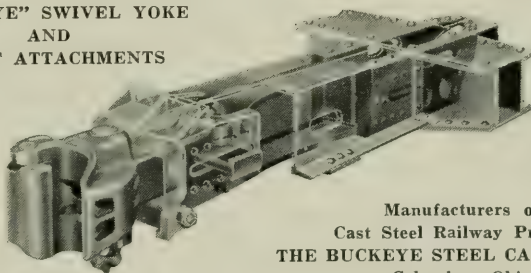


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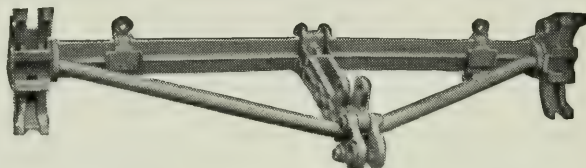


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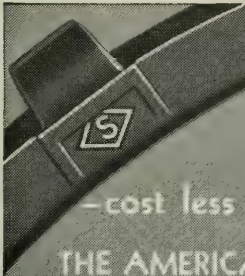
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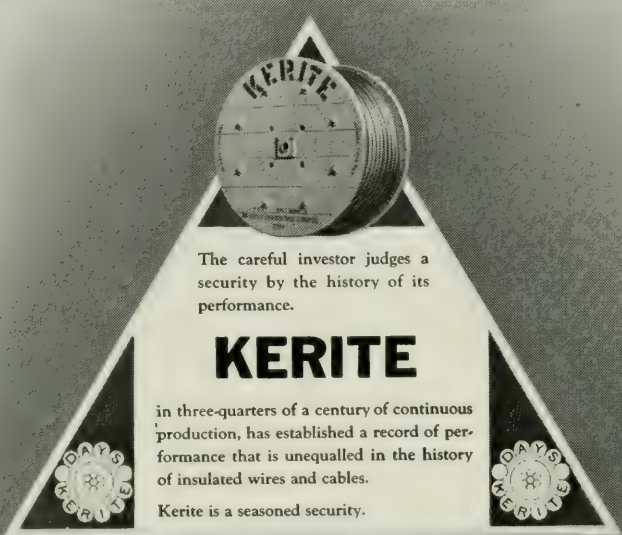
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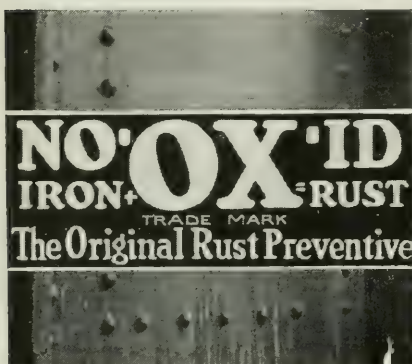
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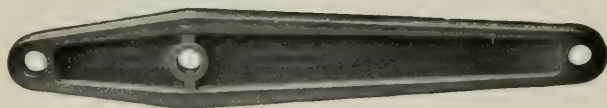
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Designed to give uniform stress conditions throughout entire body of lever. Levers are drilled from templets and exact spacing between holes is thus assured.

Drop forging makes all levers uniform.

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### CURRENT AVERAGE TESTS

*For 12 Months*

#### 910 Consecutive Heats

|         | Tensile Strength<br>Lbs. per sq. in. | Yield Point<br>Lbs. per sq. in. | Elong. %<br>in 2 in. |
|---------|--------------------------------------|---------------------------------|----------------------|
| HIGH    | 61370                                | 40420                           | 28.1                 |
| LOW     | 56490                                | 37210                           | 22.6                 |
| AVERAGE | 58344                                | 38494                           | 25.9                 |

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Railroad Car Castings*

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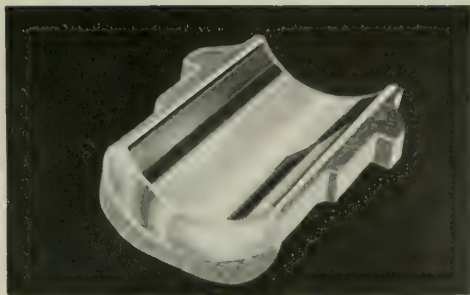
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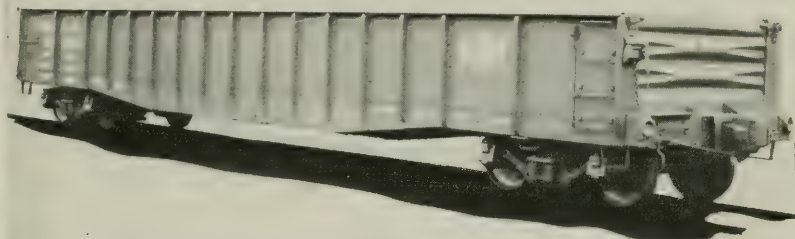
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**OF**  
**The Railway Club of Pittsburgh**

Organized October 18, 1901

Vol. XXXVIII  
No. 6

**Pittsburgh, Pa., Apr. 27, 1939**

\$1.00 Per Year  
25c Per Copy

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## PAST PRESIDENTS

|                   |                                  |
|-------------------|----------------------------------|
| *J. H. McCONNELL  | October, 1901, to October, 1903  |
| *L. H. TURNER     | November, 1903, to October, 1905 |
| *F. H. STARK      | November, 1905, to October, 1907 |
| *H. W. WATTS      | November, 1907, to April, 1908   |
| *D. J. REDDING    | November, 1908, to October, 1910 |
| *F. R. McFEATHERS | November, 1910, to October, 1912 |
| *A. G. MITCHELL   | November, 1912, to October, 1914 |
| *F. M. McNULTY    | November, 1914, to October, 1916 |
| *J. G. CODE       | November, 1916, to October, 1917 |
| *D. M. HOWE       | November, 1917, to October, 1918 |
| *J. A. SPIELMAN   | November, 1918, to October, 1919 |
| H. H. MAXFIELD    | November, 1919, to October, 1920 |
| FRANK J. LANAHAN  | November, 1920, to October, 1921 |
| *SAMUEL LYNN      | November, 1921, to October, 1922 |
| *D. F. CRAWFORD   | November, 1922, to October, 1923 |
| *GEO. D. OGDEN    | November, 1923, to October, 1924 |
| A. STUCKI         | November, 1924, to October, 1925 |
| *F. G. MINNICK    | November, 1925, to October, 1926 |
| *G. W. WILDIN     | November, 1926, to October, 1927 |
| E. J. DEVANS      | November, 1927, to October, 1928 |
| W. S. McABEE      | November, 1928, to October, 1929 |
| E. W. SMITH       | November, 1929, to October, 1930 |
| LOUIS E. ENDSLEY  | November, 1930, to October, 1931 |
| *JOHN E. HUGHES   | November, 1931, to October, 1932 |
| F. I. SNYDER      | November, 1932, to October, 1933 |
| C. O. DAMBACH     | November, 1933, to October, 1934 |
| R. H. FLINN       | November, 1934, to October, 1935 |
| R. P. FORSBERG    | November, 1935, to October, 1936 |
| E. A. RAUSCHART   | November, 1936, to October, 1937 |
| G. M. SIXSMITH    | November, 1937, to October, 1938 |

\*—Deceased.

Meetings held fourth Thursday of each month except June, July and August.



# PROCEEDINGS OF MEETING

APRIL 27, 1939

The meeting was called to order in the Fort Pitt Hotel at 8:00 o'clock p. m., with President J. D. Beltz in the Chair.

Registered attendance 165 as follows:

## MEMBERS

|                    |                    |
|--------------------|--------------------|
| Ackley, J. O.      | Golden, A. B.      |
| Adams, Frank W.    | Goldstrom, G. E.   |
| Ansman, J. M.      | Goodwin, A. E.     |
| Aulbach, A. J.     | Greek, Joseph      |
| Balla, J. A.       | Grieve, Robert E.  |
| Barr, H. C.        | Guinnip, M. S.     |
| Baumann, E. G.     | Hansen, William C. |
| Beam, E. J.        | Heer, Walter       |
| Beeson, H. L.      | Hilstrom, A. V.    |
| Beitsch, George F. | Holmes, E. H.      |
| Bell, Charles W.   | Honsberger, G. W.  |
| Beltz, J. D.       | Irvin, P. J.       |
| Bender, H. P.      | Johnson, J. W.     |
| Berg, Karl         | Kearfott, W. E.    |
| Berg, Max          | Kentlein, John     |
| Bisler, W. E.      | Koch, Edward J.    |
| Blyth, F. G.       | Kohl, C. G.        |
| Britt, T. E.       | Kramer, J. Kenneth |
| Brown, E. F.       | Lanahan, Frank J.  |
| Bruce, S. S.       | Larson, W. E.      |
| Buffington, W. P.  | Leonard, P. J.     |
| Burel, W. C.       | Lincoln, R. B.     |
| Campbell, F. R.    | Long, R. M.        |
| Carter, E. D.      | Lowe, William T.   |
| Chaffin, H. B.     | Mackall, C. F.     |
| Christy, F. X.     | Masterman, T. W.   |
| Conway, J. D.      | Matchett, H. K.    |
| Coombe, A. B.      | Mayer, L. I.       |
| Crawford, A. M.    | Millar, C. W.      |
| Cudworth, H. D.    | Misner, George W.  |
| Dambach, C. O.     | Mitchell, W. S.    |
| Davis, Charles S.  | Moir, W. B.        |
| Dean, E. E.        | Morgan, Homer C.   |
| Dickson, K. B.     | Morrison, R. A. J. |
| Edwards, Walter    | McKinley, A. J.    |
| Endsley, Louis E.  | McKinley, John T.  |
| Farlow, G. B.      | McLaughlin, H. B.  |
| Faustman, Paul L.  | Norris, J. L.      |
| Finegan, Thomas A. | Ord, George        |
| Fisher, Earl W.    | Overholt, B. C.    |
| Forsberg, R. P.    | Peirce, W. B.      |
| Gilg, Henry F.     | Pickard, S. B.     |
| Glaser, C. J.      | Pollock, H. J.     |
| Glenn, J. H.       | Purchard, Paul     |
| Goda, P. H.        | Reagan, Henry V.   |

Reymer, Charles H.  
 Reynolds, D. E.  
 Robertson, A. S.  
 Rudisill, D. E.  
 Rushneck, G. L.  
 Rutter, H. E.  
 Schako, E. J.  
 Searles, E. J.  
 Servais, F. W.  
 Severn, A. B.  
 Shellenbarger, H. M.  
 Sixsmith, G. M.  
 Smith, G. M.  
 Staats, Kenneth A.  
 Stevens, L. V.  
 Stoffregen, Louis E.  
 Stucki, A.

Sutherland, Lloyd  
 Swank, W. E.  
 Terkelsen, B.  
 Terry, Edward  
 Tipton, G. M.  
 Tracey, J. B. A.  
 Unger, J. S.  
 Urtel, E. J.  
 Utzler, E. S.  
 Wheeler, C. M.  
 Winslow, G. W.  
 Woodward, R.  
 Wright, John B.  
 Wallace, O. T.  
 Wikander, O. R.  
 Yarnall, Jesse  
 Yohe, J. K., Jr.

## VISITORS

Angermann, J. C.  
 Bail, C. W.  
 Barthalow, R. C.  
 Byrnes, Carl E.  
 Byrnes, Charles W.  
 Campbell, F. T.  
 Clugh, C. I.  
 Condon, H. R.  
 Davis, William B.  
 Dean, G.  
 De Venzio, V. F.  
 Droyne, Vincent  
 Hellmann, Kurt  
 Hemma, Charles H.  
 Johnson, R. C.  
 Ketler, C. P.  
 Kirk, Malcolm  
 Lewis, S. B.  
 Lindner, John  
 Lowndes, T. H.

Mashl, S.  
 Mecklen, Miss Madelyn  
 Meyer, C. E.  
 McCrossin, J. D.  
 McGael, William J.  
 Niclout, Maurice  
 Pfusch, Martin G.  
 Ritter, Max  
 Rothenhoefer, Walter  
 Schofield, A. M.  
 Sixsmith, W. L.  
 Smith, I. G.  
 Stitt, D. R.  
 Stout, A. W.  
 Street, C. K.  
 Thomas, M. F.  
 Urban, C. E.  
 Van Wormer, G. M.  
 Vaughan, G. C.  
 Walther, G. W.

Wittmers, Herman

Before starting the business of the regular meeting, President Beltz introduced Miss Madeline Mecklem, a friend of Mr. Vincent Kroen, Chairman of the Entertainment Committee. Miss Mecklem presented a very clever performance in ventriloquism with the assistance of "Pinky" who seemed to do most of the talking. Her entertainment caused much merriment and was enthusiastically received.

Then followed the reading of the minutes of the preceding meeting. The roll call was dispensed with as that is shown by the attendance cards.

The Secretary then read the following proposals for membership:

Aiken, Glen A., President, American Nut & Bolt Fastener Company, 2029 Doerr Street, North Side, Pittsburgh, Pa. Recommended by J. D. Conway.  
 Austin, David F., Vice President in charge of Sales, Carnegie-Illinois Steel Corporation, Carnegie Building, Pittsburgh, Pa. Recommended by J. D. Conway.  
 Carr, George R., Vice President & General Manager, Dearborn Chemical Company, 310 South Michigan Avenue, Chicago, Ill. Recommended by J. D. Conway.  
 Evans, T. M., President, H. K. Porter Company, Inc., 49th & Harrison Streets, Pittsburgh, Pa. Recommended by E. R. Dunkerly.  
 Hilliard, Thomas J., General Manager of Sales, Carnegie-Illinois Steel Corporation, Carnegie Building, Pittsburgh, Pa. Recommended by J. D. Conway.  
 Kramer, J. Kenneth, Clerk, Carnegie-Illinois Steel Corporation, 207 Olympia Street, Mt. Washington, Pittsburgh, Pa. Recommended by E. S. Rupp.  
 Landes, B. D., Manager of Sales, H. K. Porter Company, Inc., 49th & Harrison Streets, Pittsburgh, Pa. Recommended by E. R. Dunkerly.  
 Maines, Thomas J., Salesman, H. K. Porter Company, Inc., 49th & Harrison Streets, Pittsburgh, Pa. Recommended by E. R. Dunkerly.  
 McGehee, E. J., Vice President, The Wood Preserving Corporation, Koppers Building, Pittsburgh, Pa. Recommended by J. D. Conway.  
 White, J. C., General Manager, Pennsylvania Railroad Company, Pennsylvania Station, Pittsburgh, Pa. Recommended by J. D. Beltz.

**PRESIDENT:** As soon as the applications for membership, which the Secretary has just read, have been approved by the Executive Committee, these gentlemen will become members of this Club. We will be very glad to have them. We hope they attend these meetings regularly and make themselves right at home here.

Is there anything further, Mr. Secretary?

**SECRETARY:** Since the preceding meeting we have had presented to us notice of the death of three of our members, J. A. Beattie, former General Superintendent, McKeesport Connecting Railroad, died April 6, 1939; John M. Connors, Assistant to Car Foreman, Montour Railroad, died April 18, 1933, and H. J. Mulligan, Sales Engineer, Southern Wheel Company, died March 27, 1939.

**PRESIDENT:** The Secretary will have the proper memorials placed in the minutes for these deceased members.

I will now call your attention to the fact that the next meeting is to be held at the Mellon Institute of Industrial Research, 4400 Fifth Avenue. You will be sent notice of the time of the meeting. The Reception Committee is taking care of the arrangements and further information regarding this meeting will be contained in your notice. After the meeting we will be conducted through the Institute, which should prove to be a very interesting and instructive affair. We hope to have as many members as possible present, and while we cannot, of course, estimate the attendance at this time, I believe we can take care of as many as can come. We do not have an opportunity every day to do something like this which will be quite different from what we have been accustomed to in our meetings, so we would be very pleased to have as many members as possible turn out for this meeting. We feel sure you will all enjoy it.

The gentleman who will speak this evening will address us on the subject "The Lumber Industry and Its Relation to Transportation." He has been highly recommended and I feel certain we have been very fortunate in having the gentleman who will now address us. I therefore take pleasure in introducing our speaker, Mr. Harry R. Condon, Vice President of The Wood Preserving Corporation of Pittsburgh.



# **The Lumber Industry And Its Relation To Transportation**

By **HARRY R. CONDON**, Vice President, The Wood Preserving Corporation,  
Pittsburgh, Pa.

It is a privilege to address you on the topic of "The Lumber Industry and Its Relation to Transportation." That subject is of utmost importance to all of us whether we are engaged in Transportation, in a Forest Products Industry, or whether, as may be assumed by some, interest is principally academic. Wood and wood products are such everyday articles of use that their vast significance in the economic life of the nation is frequently overlooked.

Lumbering was the first industry established in the New World where trees had to be cleared from the ground before agriculture could begin, and the product of those trees was used to shelter the pioneers and their livestock. You will recall that the entire Atlantic Coast region was forested. Early manufacture was entirely by hand-labor and tools were confined to the ax, saw, wedge, and sledge. Probably the first sawmill, operated by water-power, was established near Jamestown, Virginia, in 1607. The second near Berwick, Maine, in 1631. The first steam sawmill was built in New Orleans in 1811, and was promptly burned by a mob of angry laborers who saw an end of their occupation through the application of steam power to saws.

The first commercial mills of size came into production in New England shortly after 1630. Development of the industry was slow and it was not until after the beginning of the Nineteenth Century that individual units produced as much as four to five thousand board feet per day. Such mills required two to three days of operation to make a modern carload of lumber.

From 1840 onwards there was a tremendous expansion of wood manufacture to meet the housing and other demands of the greatest population movement in the world. Sawmills which had been operated along the Eastern Seaboard to meet local demands, and the export trade which had already developed, found a large and growing demand from the Prairie and Plains States in which there was not sufficient growing timber to meet the requirements of the settlers and the new towns. Concurrently, the industry itself started to move westward; into New York about 1850, into Pennsylvania 1860-70, into Michigan in 1880, and into Minnesota in the 90's. The early trek followed the virgin stands of probably the most abundant supply of the most useful wood known to mankind—white pine.

As the Railroads extended westward and populations swarmed into the upper Mississippi Valley, a multitude of sawmills, mostly small, came into existence and are estimated to have numbered 45,000 units. Those sawmills and the settlements were connected by direct and fast transportation by rail. Had it not been possible for the treeless regions of the West to draw on the vast forests of the East over rail lines, the



settlement and general development of the Plains States would have been set back very substantially. The constant extension of markets and the drain on Eastern and Northern forests caused the lumber industry to move into the Southern Pine belt, and from there to the vast forests of the Pacific Coast.

The crest of lumber production was reached in 1907 when 46 billion board feet were cut. In 1932, low year of the depression, lumber production dropped to slightly more than 10 billion board feet, but in 1937 it mounted to 26 billion board feet. The per capita consumption of lumber ranged from 57 board feet in 1809 to 523 board feet in 1906, and is now at about 150 board feet per annum. The gradual decrease is due to several causes including increased cost to consumer due to longer haul from stump to place of use, the substitution of competitive materials, and the substantially longer service life brought about by the preservative treatment of wood and improved design of wood structures. Fifty years ago the average haul of lumber was between 200 and 300 miles. Today, it is approximately 800 miles.

The uses made of products of the forest have undergone marked changes. Early in Colonial times wood fuel was employed universally and accounted for 60 to 75 per cent of all wood utilized, while today, only about 25 per cent of the annual cut is burned as fuel. It is estimated that there are now at least 4,000 separate items of use, although sawed lumber leads with an approximate consumption of 50 per cent of all wood manufactured.

The original forested area of the United States is estimated to have approximated 820 million acres. Today our forested area is about 600 million acres, or less than 5 acres per capita. Not all of that area is capable of producing commercial timber or is available for its growth. Eleven million acres have been withdrawn from timber use through the creation of parks and reserves. Over 100 million acres have such inferior growth or are so inaccessible that their stands are of little or no commercial value. A net of somewhat less than 500 million acres, or about 4 acres per capita, are now capable of producing timber commercially.

Our present forests are located principally in three great belts. (1), East of the Mississippi and in Eastern Oklahoma and Texas; (2), the Rocky Mountain States; (3), the Pacific Coast States. The resources of the latter belt are of particular importance; with but 26 per cent of the commercial forest area the Western stand contains almost 80 per cent of all saw timber and 90 per cent of all virgin saw timber. The total of standing saw timber is estimated at almost 2,000 billion board feet, which is sufficient, without any allowances for growth increment, for approximately 75 years production at the average rate of cut over the 10 years beginning in 1925. Of course, timber resources will not have disappeared when present stands have been logged, since replacement is proceeding through natural process and by reforestation.

Forests in the United States constitute a natural resource second only to land devoted to agriculture. Lumbering is an important industry in 35 states and it has been estimated that it provides a livelihood for one-tenth of our total population. We are the largest producers of lumber in the world, and we use about one-half of all sawn lumber manufactured. Wood manufacture is one of the most important in American industry, normally ranking about third in number of establishments and fourth or fifth in wage-earner employment. Even in the depression year of 1933 the forest products industry was a billion dollar business.

Of particular interest to this audience is the fact that the lumber industry spends over \$400,000,000 per year for Railroad transportation. In 1937 revenue loadings amounted to 1,844,900 carloads on Class 1 Railroads. That quantity constitutes more than 38,000 of the average 48-car trains.

During the era of railroad construction it is believed that railroads used as much as half of the entire timber cut in some years. At present, railways purchase approximately 20 per cent of the total timber cut each year. In 1937 Class 1 Railways directly purchased timber costing about \$105,000,000, and that figure does not include materials and supplies purchased for railways by contractors. Cross, switch and bridge ties in that year cost over \$65,000,000, lumber and timber over \$35,000,000, and other forest products over \$4,000,000. The purchases in 1938 were at a considerably lower level, but in that year almost 10 per cent of railway expenditures for fuel, material and supplies was for forest products.

Perhaps too much time has been given to discussion of the early history of the lumber industry, but, if so, the purpose has been to emphasize the inseparable relationship of Transportation to the manufacture and marketing of forest products since earliest Colonial days. While problems of transportation are problems of practically all industry, lumber and timber, because of its bulk and the distances over which movements must be made, are markedly affected by the availability or nonavailability of cheap and efficient means of haul. Transportation, undoubtedly, is the most important factor with which applied forestry and lumber manufacture and distribution has to deal. Forest land is of value to its owners and to the potential users of its products only to the extent that ways and means are available for transportation from stump to user. The first undertaking of George Washington after his return to private life and his resignation as Commander-in-Chief of the Continental Army was to develop lines of transportation between east and west, utilizing rivers flowing into the Atlantic Ocean and into the Ohio River. His recommendations were favorably acted upon by the Virginia Legislature and led to the organization of the Potomac Company, which later became the Chesapeake & Ohio Canal Company. Thus was undertaken one of the earliest Governmental steps aimed at the

development of a system of National waterways for the strengthening of the union of States, increasing trade and promoting general prosperity. The necessity of transporting bulky commodities such as forest products at less cost than was possible over the few existing turnpikes and of reaching new outlets for distribution spurred those early transportation developments.

Many of our existing major rail transportation systems are the outgrowth of consolidation of logging railroads built to exploit virgin timber. Lumbering is, therefore, directly responsible for the construction of rail lines into many sections which otherwise would have remained long in an undeveloped state, and for important links on our present rail systems. While methods of logging have changed with the advent of highways, lateral roads, motor tractors and trucks, the railroads remain a prime necessity for the economical transportation of forest products over the constantly lengthening distances from sources to markets.

It is true that the old and costly transportation methods often made it necessary for timber owners and operators to "clear-cut" the land, which method of exploitation exposed them to the charge of wanton devastation, but please bear in mind the economic conditions and the necessities under which those early operations were conducted. Timbermen could not log selectively and had no expectation of again cutting over the same area. Fortunately, improved logging and manufacturing methods, better transportation and markets, including higher selling prices, fuller utilization of former waste materials, and adjustment to some extent of taxation on growing crops of trees, combined with better appreciation of future values of stumpage, have contributed to the commercial practicability of growing rotating crops of trees. Nowadays, expensive spurs are eliminated on logging railroads and logs are hauled to the main line and often directly to the mill by motor trucks and tractors. That development in transportation makes it practicable to cut relatively small footage per acre as opposed to the former necessity of clear-cutting and operating only on tracks which had a high average yield per unit.

Because of the possibility of selectively logging small areas, farm woodlands have assumed greater and greater importance in supplying wood products generally and for the direct requirements of the Transportation Industry. Farmers no longer need consider their woodlands as a farm adjunct only. They can be cropped for products which move into the general merchandise market, thus directly benefitting transportation as well as yielding a substantial financial return to the stumpage owner.

Farm woodlands constitute about 25 per cent of all commercial forest land. East of the Rocky Mountains they include more than three-fifths of all forest area and are a stable form of private ownership. In a recent year the value of products from woodlands amounted to \$250,000,000. A striking example of woodland revenue is in Vermont, where



forest products from 41 per cent of the total farm area produced 55 per cent of all cash income.

More and more, farmers are turning to systematic management of their woodlands as the source of a profitable and sustained crop yield. The Railroads are vitally interested in that development as a substantial factor in the stabilization of industry along their lines. Permanent and stabilized communities dependent on forest industry are supplanting the former nomadic and transitory features of the lumber business, and, if you please, should receive from the carriers who serve them every practicable aid.

The railroads are direct consumers of vast quantities of wood products. In forested areas they should be able to obtain, if proper woodland management and utilization is practiced, a high percentage of the forest products needed for rail operations. Past wasteful exploitation of forest resources and a current necessity of "importing wood" should not be accepted by any railroad traversing wooded sections as a reason for following that practice indefinitely. May I venture the suggestion that the Transportation Industry should more aggressively develop a long-range policy of encouraging a revived and stable Forest Products Industry by giving to landowners and lumber operators every practicable aid in their rail purchases. While the problems of railroad purchase and supply, particularly under present fiscal conditions, are not undervalued, it is submitted that a market more stable with respect to both quantities and prices would go far in encouraging landowners along right-of-ways to grow trees as a crop.

In discussing the Forest Products Industry in relation to the Railroads, we must not omit reference to the humble cross tie. Under tracks of Class 1 Railways of the United States and Canada there are more than a billion cross ties. Perhaps we can better visualize that tremendous number by converting it to the equivalent of somewhat more than 80,000 trainloads. It is not likely that the wooden tie will soon be supplanted by one of another material despite research and the ingenuity of inventors who have patented many thousands of substitutes. But not so many years ago the managements of many Railroads seriously were concerned about impending scarcity and high cost of wood for track structures. Those were the days when an average of 250 or more new ties were required each year for each mile of maintained track, and naturally durable wood was becoming more and more difficult to obtain. Several decades ago Railroads started to use preserved wood extensively and there was made available for use an abundant and cheap supply of non-durable wood which, when preserved, outlasted untreated ties by a wide margin. As a consequence average annual renewals per mile have dropped to less than 100 ties. The reduction in drain on forests due to the use of treated cross ties has been augmented by Railroad consumption of many other items of preserved wood and by widespread and



constantly increasing use of treated forest products in general industry and construction.

Railroads alone are reported to be saving more than \$50,000,000 per year through the use of treated wood. In this connection, it should be noted that capital investment losses in the United States caused by decay, wood destroying insects and marine borers are estimated at \$200,000,000 annually. Determination of the Railroads and other large consumers of wood to obtain relief from such large and unnecessary losses is responsible for the growth of a component unit of the forest products group; i.e., The Wood Preserving Industry, which in the last decade processed the equivalent of two billion board feet per year.

It is estimated that prolongation of the service life of wood by preservative treatment, thereby reducing replacements, annually saves the cutting of one million acres of southern pine lands alone. That is true forest and cash conservation.

(At this point pictures were projected on a screen and explained by Mr. Condon).

PRESIDENT: Thank you very much, Mr. Condon, for your very interesting address.

Is there anyone who would like to ask questions?

MR. C. O. DAMBACH: I would like to ask Mr. Condon two questions—first, in respect to comparison of service life of raw wood or untreated ties as compared with same which have undergone treatment. I believe Mr. Condon stated the tie replacement for raw untreated ties per mile each year was an average of 250 or more as compared with less than 100 when using treated timber, indicating two and one-half times as much life in favor of the ties which had undergone treatment. Does this refer to all tracks, or just ties applied to the main line?

MR. CONDON: For all tracks of Class I Railroads. Treated ties in side tracks or running tracks of lesser importance will last longer than those in main or heavy duty tracks where mechanical stresses are an important factor in tie life. The service life of untreated ties varies with kind or species of wood used and type of service; for a good grade of white oak in this section the average is slightly more than 8 years. Many maintenance engineers now figure on a 25-year or more service life for creosoted ties. One engineer with whom I discussed this subject informed me that he expects to get an average of 40 years service from creosoted ties on a sub-division recently inspected. That division carries only moderate traffic.

MR. DAMBACH: The second question is—Is there any advantage in treating telegraph poles above the butt? About 25 years ago I built a telegraph line and applied carbolineum to the butts of the poles and

incidentally some of these poles have been reset two and three times, and the tops are still in good condition in view of which I was wondering whether there was much advantage in treating telegraph poles.

MR. CONDON: There is advantage in treating the butts of some kinds of poles. That is a common practise with western red cedar, the heartwood of which is quite durable but the sapwood of which decays rather quickly when exposed to soil moisture. When chestnut poles were available their butts also were frequently dipped or painted with a preservative.

There is advantage in pressure treating the full length of Southern Yellow Pine poles. The wisdom of that is attested by the requirements and specifications of the principal pole users who have found that full-length pressure impregnation with creosote gives maximum service life. Usually 8 lbs. of preservative per cubic foot of wood is required.

MR. R. P. FORSBERG: I would like to ask Mr. Condon what effect treating timber has with regard to its being attacked by termites?

MR. CONDON: Probably the best answer to that question is to state that some years ago a U. S. Governmental agency selected a site on Barro Colorado Island, notoriously infested with termites, and had erected thereon a "test house" built of treated wood. Supports and underframe were creosoted. Superstructure and furniture were treated with zinc chloride. Annual inspections show that no damage has been done by termite attack. It is important to note, however, that all wood in that house was impregnated under standard pressure processes. It was not treated superficially, or in place.

QUESTION: What would you say would be the estimated life of treated yellow pine poles?

MR. CONDON: The largest user of creosoted pine poles, after exhaustive studies in the field, has come to the conclusion that the chance of failure of any Southern Pine pole treated according to its specifications is practically nil within 25 years after installation. Of course, the average service life expectancy is much more than 25 years. A safe estimate is that creosoted pine poles will last at least 35 or 40 years, average.

QUESTION: Does this treatment of a pole injure the fibre of the wood in any way?

MR. CONDON: Wood can be harmed in treating it just as any other structural material can be hurt by improper or careless manufacture or processing. Exhaustive tests by competent laboratory experts show that wood properly treated suffers very little if any reduction in strength. Engineers designing structures of treated wood need make

no allowance for reduction in strength because of treatment. Naturally, caution should be exercised in procurement of materials from dependable sources and that caution extends to proper and adequate preservation as well as to avoidance of strength reduction.

Carelessness in selection of a supplier of treated wood is no more excusable than carelessness in buying any other structural material.

QUESTION: We have found that some poles we have treated will snap in cold weather,—break right in the center,—although the timber appears to be sound.

MR. CONDON: Usually such damage occurs in the careless handling of frozen wood. Every so often breakage is reported when poles are rolled or dropped from a car or truck to ground or skids without proper precautions being taken to avoid damage. A 2,000-lb. pole dropped 4 or 5 feet so that it strikes on its tip is subject to a stress which it is not intended to sustain, particularly when the wood is frozen. Reasonable care in handling will avoid damage of the kind you refer to.

QUESTION: We have had some cases where poles being delivered by trucks and tractors that would drop off and roll into the ditch alongside of the road, when recovered, were found to be frozen and would break.

MR. CONDON: That is so, but as before stated, can be attributed to improper handling.

QUESTION: What would it cost to fireproof building materials; that is, lumber used like that?

MR. CONDON: The cost is quite variable, depending upon kind of wood processed and the quantity ordered, as well as the degree of fire retardance specified. For average building materials in reasonable quantities, probably about \$25.00 to \$35.00 per thousand board feet.

QUESTION: Including the lumber?

MR. CONDON: No. That cost covers treatment only. The cost of the wood and its transportation from source to point of use is in addition.

MR. J. D. BELTZ: How long does it take you to treat the modern cross tie and what process do you use in treating the general run-of-mine cross tie.

MR. CONDON: Seasoned cross ties are treated in an average time of 5 to 7 hours. An empty-cell process is usually specified, leaving in the wood from 6 to 8 pounds of creosote or creosote solutions per cubic foot of wood content. The preservative is heated to 175-200 degrees Fahrenheit and pressed into the wood under pressures of from 175 to 200 lb. per square inch.



Green or unseasoned hardwood ties require special processing with facilities and equipment with which all treating plants are not equipped. Considerably longer than 5 to 7 hours are required for treating green wood, and satisfactory results are obtainable only by trained personnel working with adequate equipment.

MR. HENRY GILG: Is there anything done with sawdust that might produce traffic for the railroads.

MR. CONDON: Wood flour is about the best outlet for sawdust. Much of it is used in the manufacture of linoleum and similar products, but there is still plenty of sawdust going to waste.

MR. HENRY GILG: Could it be used in the manufacture of paper pulp?

MR. CONDON: There has been considerable experimentation along that line but so far as I am informed sawdust is not commercially used for paper pulp.

QUESTION: If timber was cut at certain seasons in the year would there be any difference in the strength of that timber, or is there one special season for cutting? For example, if it were cut in the Spring or in the Fall, would that timber cut in the Spring be better than the timber cut in the Fall, for the same grade of wood?

MR. CONDON: There is no difference in the final strength of wood cut under varying seasonal conditions. The strength of any piece of wood is directly related to its moisture content, i. e., at 10% moisture content wood is stronger than at 25% moisture content. If wood cut in December is dried to 10% moisture it would have exactly the same strength as if cut in April or August and dried to the same extent.

It is a fallacy that wood is drier and stronger if cut "when the sap is down," say in January, than if cut "when the sap is up" in April or May. Actually our northern trees contain more water in their trunks before they leaf out in the Spring than they do in Summer. Nature has started to store water in the trees before the end of Winter in readiness for the tremendous volume needed for leaf manufacture. Witness the maple-sugar industry and the time of the year when the sap is gathered.

"Winter-cut" wood often is preferred to Summer-cut, but for reasons entirely unrelated to strength when cut. Wood cut during the late Fall and in Winter seasons with less risk of checking and splitting through rapid loss of moisture and less risk of infection by decay-producing organisms which are active in Spring and Summer.

MR. J. W. JOHNSON: Mr. President, this club looks with pride that we have had many speakers address us who have presented papers on highly technical subjects, but I do not know of any address where the



subject has been presented in a more understandable or more capable manner than this subject has been presented here tonight by Mr. Condon. To the layman it is edifying, illuminating and helpful. We may have thought, that in many ways, wood was becoming extinct, but Mr. Condon has made it clear to us the timber industry plays a very important part in the commerce of this land.

In recognition of the presentation of this fine paper by Mr. Condon I move you, Mr. President, this club extend to him our appreciation of the service he has rendered us by a rising vote of thanks.

(Motion carried and rising vote of thanks given to Mr. Condon.)

There being no further discussion, the meeting, on motion was adjourned to the lunch table.

J. D. CONWAY, Secretary.

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By LAWRENCE W. BASS, Assistant Director, Mellon Institute,  
Pittsburgh



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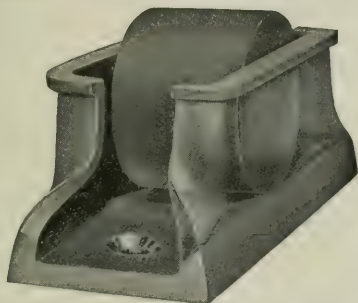
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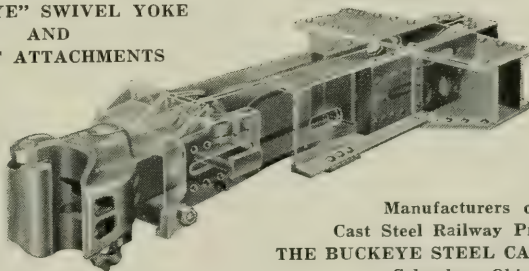


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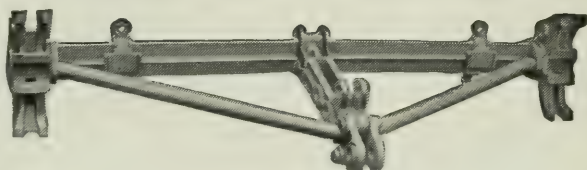


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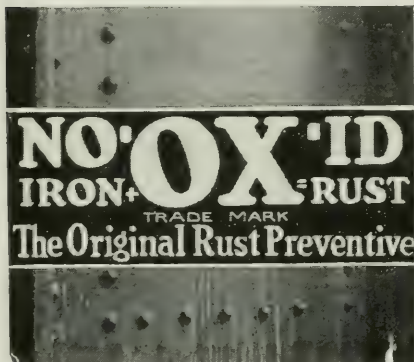
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|---------------------------|---|---|---|--------|
| Room Rates with Bath from | - | - | - | \$2.50 |
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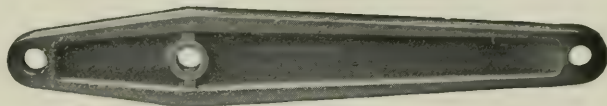
Excellent Coffee Shop

|                 |   |   |   |                  |
|-----------------|---|---|---|------------------|
| Club Breakfasts | - | - | - | 30c, 40c and 50c |
|-----------------|---|---|---|------------------|

|                |   |   |   |                  |
|----------------|---|---|---|------------------|
| Noon Luncheons | - | - | - | 50c, 65c and 75c |
|----------------|---|---|---|------------------|

|                          |   |   |   |     |
|--------------------------|---|---|---|-----|
| Evening Dinner, Complete | - | - | - | 85c |
|--------------------------|---|---|---|-----|

## Schaefer Drop-Forged Brake Levers



Designed to give uniform stress conditions throughout entire body of lever. Levers are drilled from templates and exact spacing between holes is thus assured.

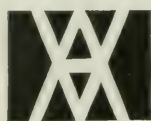
Drop forging makes all levers uniform.

Lighter in weight with increased strength.

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### CURRENT AVERAGE TESTS

*For 12 Months*

#### 910 Consecutive Heats

|         | Tensile Strength<br>Lbs. per sq. in. | Yield Point<br>Lbs. per sq. in. | Elong. %<br>in 2 in. |
|---------|--------------------------------------|---------------------------------|----------------------|
| HIGH    | 61370                                | 40420                           | 28.1                 |
| LOW     | 56490                                | 37210                           | 22.6                 |
| AVERAGE | 58344                                | 38494                           | 25.9                 |

*This Trade-mark is your security on  
Railroad Car Castings*

*Send Blue Prints for Estimates*

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PITTSBURGH, PA.

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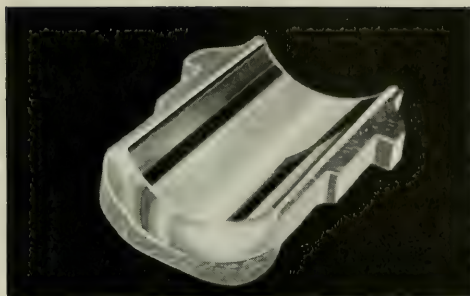
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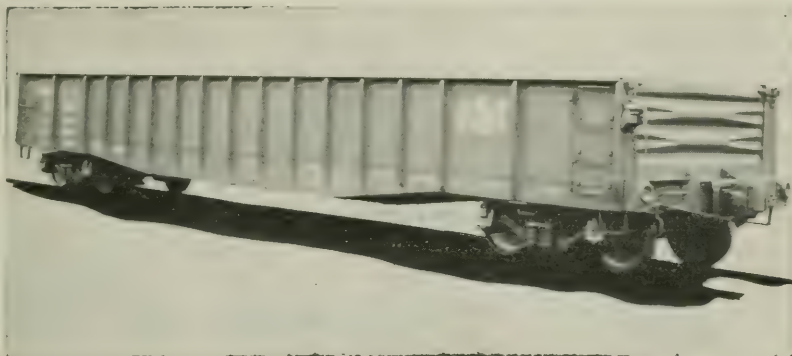
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19

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My Address.....

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**OFFICIAL PROCEEDINGS**  
**OF**  
**The Railway Club of Pittsburgh**

Organized October 18, 1901

Vol. XXXVIII  
No. 7

**Pittsburgh, Pa., May 25, 1939**

\$1.00 Per Year  
25c Per Copy

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|------------------|----------------------------------|
| *J. H. McCONNELL | October, 1901, to October, 1903  |
| *L. H. TURNER    | November, 1903, to October, 1905 |
| *F. H. STARK     | November, 1905, to October, 1907 |
| *H. W. WATTS     | November, 1907, to April, 1908   |
| *D. J. REDDING   | November, 1908, to October, 1910 |
| *F. R. McFEATERS | November, 1910, to October, 1912 |
| *A. G. MITCHELL  | November, 1912, to October, 1914 |
| *F. M. McNULTY   | November, 1914, to October, 1916 |
| *J. G. CODE      | November, 1916, to October, 1917 |
| *D. M. HOWE      | November, 1917, to October, 1918 |
| *J. A. SPIELMAN  | November, 1918, to October, 1919 |
| H. H. MAXFIELD   | November, 1919, to October, 1920 |
| FRANK J. LANAHAN | November, 1920, to October, 1921 |
| *SAMUEL LYNN     | November, 1921, to October, 1922 |
| *D. F. CRAWFORD  | November, 1922, to October, 1923 |
| *GEO. D. OGDEN   | November, 1923, to October, 1924 |
| A. STUCKI        | November, 1924, to October, 1925 |
| *F. G. MINNICK   | November, 1925, to October, 1926 |
| *G. W. WILDIN    | November, 1926, to October, 1927 |
| E. J. DEVANS     | November, 1927, to October, 1928 |
| W. S. McABEE     | November, 1928, to October, 1929 |
| E. W. SMITH      | November, 1929, to October, 1930 |
| LOUIS E. ENDSLEY | November, 1930, to October, 1931 |
| *JOHN E. HUGHES  | November, 1931, to October, 1932 |
| F. I. SNYDER     | November, 1932, to October, 1933 |
| C. O. DAMBACH    | November, 1933, to October, 1934 |
| R. H. FLINN      | November, 1934, to October, 1935 |
| R. P. FORSBERG   | November, 1935, to October, 1936 |
| E. A. RAUSCHART  | November, 1936, to October, 1937 |
| G. M. SIXSMITH   | November, 1937, to October, 1938 |

\*—Deceased.

Meetings held fourth Thursday of each month except June, July and August.



# PROCEEDINGS OF MEETING

MAY 25, 1939

The meeting was called to order in the auditorium of the Mellon Institute of Industrial Research, Fifth Avenue, Pittsburgh, Pa., at 8:00 o'clock P. M., with President J. D. Beltz in the chair.

Registered attendance 383 as follows:

## MEMBERS

|                     |                         |
|---------------------|-------------------------|
| Ackley, J. O.       | Davis, John W.          |
| Adams, Frank W.     | Day, Tom R.             |
| Allen, Earl M.      | Deakins, H. H.          |
| Ambrose, W. F.      | Dean, E. E.             |
| Anderegg, George W. | Dean, Robert W.         |
| Ansman, J. M.       | Diven, J. B.            |
| Bagaley, W. W.      | Duff, William G.        |
| Balla, J. A.        | Dunham, C. W.           |
| Barr, H. C.         | Eagan, D. F.            |
| Barton, E. E.       | Eberhart, James A.      |
| Bass, Dr. L. W.     | Emery, E.               |
| Bauer, L. M.        | Endsley, Prof. Louis E. |
| Baumann, E. G.      | Evans, Charles S.       |
| Beam, E. J.         | Evans, T. M.            |
| Beck, C. H.         | Failor, Charles W.      |
| Bell, Charles W.    | Farlow, George B.       |
| Beltz, J. D.        | Faustman, Paul L.       |
| Berg, Karl          | Ferguson, George        |
| Beswick, R. M.      | Fox, George W.          |
| Black, C. M.        | Fralic, C. F.           |
| Blaine, C. H.       | Frauenheim, Pierce H.   |
| Bone, H. L.         | Galbraith, James R.     |
| Brown, E. F.        | Garland, C. A.          |
| Buchanan, C. C.     | Geiser, W. P.           |
| Buffington, W. P.   | George, W. J.           |
| Burel, W. C.        | Gilg, Henry F.          |
| Button, L. R.       | Glaser, C. J.           |
| Buzzerd, J. P.      | Glaser, J. P.           |
| Byrne, W. L.        | Goda, P. H.             |
| Campbell, F. R.     | Golden, A. B.           |
| Carr, T. W.         | Goldstrom, G. E.        |
| Cipro, Thomas       | Goodwin, A. E.          |
| Clausen, Harold C.  | Gray, M. L.             |
| Colbert, J. T.      | Grieve, Robert E.       |
| Conway, J. D.       | Grove, C. G.            |
| Coombe, A. B.       | Groves, W. C.           |
| Courtney, H.        | Halberg, E. J.          |
| Cramer, F. F.       | Haller, Nelson M.       |
| Crawford, A. M.     | Hamilton, R. F.         |
| Cressler, A. B.     | Hammer, C. F.           |
| Cudworth, H. D.     | Hansen, William C.      |
| Dalzell, W. E.      | Harris, John P.         |

Harter, Arnold  
 Hassler, E. S.  
 Heer, Walter  
 Helsel, William G.  
 Hess, Charles A.  
 Hester, H. N.  
 Hilstrom, A. V.  
 Holbrook, E. L.  
 Holmes, E. H.  
 Honsberger, G. W.  
 Hoopes, R. E.  
 Hovey, O. W.  
 Irwin, R. D.  
 Jakovac, Victor P.  
 Jarres, F. A.  
 Johnson, J. W.  
 Johnson, Le Vere H.  
 Karnes, W. T.  
 Kaup, H. E.  
 Kearfott, W. E.  
 Kemmerer, R. R.  
 Kentlein, John  
 King, E. C.  
 Koch, Edward J.  
 Kohl, C. G.  
 Kramer, J. Kenneth  
 Kramer, Walter W.  
 Lanahan, Frank J.  
 Lanahan, J. S.  
 Larson, W. E.  
 Logan, J. W., Jr.  
 Long, Walter  
 Mackall, C. F.  
 Maines, Thomas J.  
 Masterman, T. W.  
 Matchett, H. K.  
 Maxwell, Thomas  
 Megee, C. R.  
 Millar, C. W.  
 Miller, J. S.  
 Mitchell, W. S.  
 Moir, W. B.  
 Montgomery, J. L.  
 Morgan, Homer C.  
 Murray, S.  
 Musgrove, W. W.  
 McIntyre, R. C.  
 McKim, Hollis  
 McKinley, A. J.  
 McMullin, Harry R.  
 Nathan, W. S.  
 Nichols, Samuel A.  
 Nieman, Charles J.

Noble, J. S.  
 Norris, J. L.  
 Orchard, Charles  
 Paisley, F. R.  
 Pickard, S. B.  
 Posteraro, S. F.  
 Purchard, Paul  
 Read, A. A.  
 Reed, Earl W.  
 Reynolds, D. E.  
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Bagaley, Robert F.  
Baldwin, Thomas W.  
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Kohl, Howard M.  
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Longnecker, Harry

Lowery, William  
 Lowndes, T. H.  
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 Lucas, J. H.  
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 Lyon, J. Boyd  
 MacMillan, W. A.  
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 Malenock, William  
 Manzey, Paul H.  
 Marshall, L. L.  
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 Metzger, Walter J.  
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 Miller, W. Edward  
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 Munro, George  
 McCauley, M. L.  
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 McGregor, D. C.  
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 McKinney, J. P.  
 McMullin, Herbert E.  
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 Nelson, J. H.  
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 Phillips, J. L.  
 Porter, Norman  
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 Rhine, Charles J.  
 Rumbaugh, J. E., Jr.

Runnette, F. M.  
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 Sanders, George  
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 Severn, Donald  
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 Simpson, I.  
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 Smail, S. P.  
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 Snively, G.  
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 Sponsler, C. F., Jr.  
 Stell, M. A.  
 Stevens, Robert  
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 Stradling, Albert  
 Stradling, C.  
 Street, C. K.  
 Stoner, C. E.  
 Stout, A. W.  
 Swanson, John A.  
 Thomas, M. F.  
 Thomson, C. F.  
 Trumpeter, W. Clifton  
 Uhar, John J.  
 Vaughan, G. C.  
 Vaughan, Richard W.  
 Vollmer, W. K.  
 Walk, William G.  
 Walker, W. S.  
 Walther, G. W.  
 Waple, C.  
 Warner, R. H.  
 Weil, H. M.  
 Wensel, D. B.  
 Wetzal, L. W.  
 Wiegand, A. P.  
 Willard, P. F.  
 Wright, John M.  
 Yets, J. J.  
 Young, Fred  
 Young, W. A.  
 Youngk, W. E.

PRESIDENT: We will dispense with the roll call and reading of the minutes of the previous meeting.

Have you any applications, Mr. Secretary?

SECRETARY: Mr. President and gentlemen. We have the following proposals for membership:



Bass, Dr. L. W., Assistant Director, Mellon Institute of Industrial Research, 4400 Fifth Avenue, Pittsburgh, Pa. Recommended by J. D. Conway.

Condon, H. R., Vice President, Wood Preserving Corporation, Koppers Building, Pittsburgh, Pa. Recommended by J. D. Conway.

Hewes, John, Jr., Superintendent, Pittsburgh Division, B. & O. R. R. Co., B&O Station, Pittsburgh, Pa. Recommended by George B. Farlow.

Kirk, M. G., Salesman, Pittsburgh Screw & Bolt Corporation, F. O. Box 1708, Pittsburgh, Pa. Recommended by Harry C. Graham.

Lott, O. C., Assistant Superintendent, B. & O. R. R. Co., Keystone Hotel, Pittsburgh, Pa. Recommended by George B. Farlow.

Mattern, W. E., Sales Engineer, Chicago Railway Equipment Company, Franklin, Pa. Recommended by J. D. Conway.

Munnikhuysen, W. F., President, The Wood Preserving Corporation, Koppers Building, Pittsburgh, Pa. Recommended by J. D. Conway.

Neff, P. W., Superintendent, Pennsylvania Railroad, Pennsylvania Station, Pittsburgh, Pa. Recommended by D. E. Rudisill.

Smith, Herman D., Locomotive Engineer, B. & O. R. R. Co., 5235 Gertrude Street, Hazelwood Station, Pittsburgh, Pa. Recommended by J. L. Norris.

Waskey, Charles A., Track Supervisor, B. & O. R. R. Co., 400 Johnston Avenue, Hazelwood Station, Pittsburgh, Pa. Recommended by G. B. Farlow.

Williams, K. S., Service Manager, Copperweld Steel Company, Glassport, Pa. Recommended by J. D. Conway.

**PRESIDENT:** I am very pleased to see the fine work the Membership Committee is doing. Is there anything further to bring before us, Mr. Secretary?

**SECRETARY:** Since our last meeting we have had reported to us the death of one of our members James S. Barrie, Material Inspector, New York Central Lines, Pittsburgh, Pa., whose death occurred on May 6th, 1939.

**PRESIDENT:** After our speaker of the evening, Dr. Bass, has delivered his address to you, we will be entertained further by a trip of inspection through this institute at the conclusion of which we will adjourn.

I think we are highly honored in being given this fine auditorium for our meeting and the opportunity to inspect this building. It is now my pleasure and privilege to introduce to you the speaker of the evening Dr. L. W. Bass, Assistant Director of the Institute. Doctor Bass:

## **INDUSTRIAL RESEARCH IN THE TRANSPORTATION FIELD**

By **LAWRENCE W. BASS**, Assistant Director, Mellon Institute, Pittsburgh

It is becoming increasingly difficult to comprehend the many changes in our present-day civilization without some knowledge of science. In industry, in commerce, in finance, and even in diplomacy and politics the influence of the laboratory is being felt. Science is the essence of the modern urge to betterment, never content, to believe that new products and processes cannot be developed to fill some human need.

The progress of science, scientific management, and industrial research hesitates before no barrier, great though it may appear. These are vital forces, moving always in the direction of enlargement of the natural riches of the earth.

Research has become recognized by business executives as an activity essential to commercial success under constantly increasing competi-

tion. At the present time roughly 40,000 industrial scientists and engineers are at work in this country, their activities being supported by an annual expenditure of about \$180,000,000. Management is convinced that this large sum is well expended and research budgets are being continually increased. Companies that in the past have never made use of the laboratory as an aid to their businesses are taking up the active support of research. Some more aggressive commercial organizations—especially in the chemical field—spend as much as 5 per cent of the sales dollar in research.

Scientific investigations for the benefit of industry are being carried on in company and trade association laboratories, in the various government departments, in universities, and in institutions such as Mellon Institute. The organization and activities of the latter institution will be discussed in detail as an example of the manner in which such programs are conducted.

### **Operation of the Industrial Fellowship System**

The aims of Mellon Institute are threefold: (1) The provision of a novel and flexible procedure for the creation of new knowledge in pure and applied science, in the latter case the work being supported by contributions from the industries; (2) The training of young scientists in specific fields of technology, as well as providing them with a broad industrial background and a familiarity with correct scientific methodology; (3) The dissemination of new technical information to the scientific world and the popularization of science and its achievements for the benefit of business executives and of the lay public, with a view to informing them respectively of the importance of research in their commercial activities and in their daily lives.

Through its Industrial Fellowship System the Institute has served in the three decades of its existence more than 4,000 companies. It has evolved about 700 new products and processes. It has created several new industries.

Each Industrial Fellowship is established on an annual contract basis by an individual, a company, or an association of manufacturers, for the purpose of conducting a fundamental investigation in some specified field. The cost to the donor covers the salary of one or more research workers, laboratory apparatus and supplies, and a part of the overhead of the Institute. Only one investigation is carried out on a particular subject at any one time.

Each investigator devotes his full time to the problem assigned to him. All results of a given research, including patentable inventions, are the property of the donor supporting the Fellowship. Administrative guidance is furnished by the Institute's Executive Staff. A unique feature of the Fellowship System is the opportunity for direct consultation with other Fellows, each a specialist in his own field; the dis-

closures of information in all such cases must be so regulated that the obligations to the respective donors are not infringed.

More than 1,000 scientists and engineers have served on Fellowships and then gone forward on their industrial careers. Many of them are ranked among the foremost technologists of this country, and even of the world. One of the most striking evidences of their success lies in the fact that during the depression their employment records have been excellent.

It is permissible in many cases to publish the findings of Fellowship researches. The total number of publications by Institute members is 20 books and monographs, 174 bulletins, 803 research reports, and 1,225 miscellaneous papers. Over 700 United States patents, and several hundred from foreign countries, have been obtained. In addition to these contributions to the literature, which are freely distributed to interested people on request, many public addresses are given by Institute scientists to popularize scientific achievements.

### **History of the Institute**

Mellon Institute, as it exists today, has developed from a small organization brought together in 1911 by Andrew W. Mellon and Richard B. Mellon to establish in Pittsburgh the industrial research procedure conceived by Robert Kennedy Duncan. Through extensive travels in Europe, Duncan had become familiar with the harmonious co-operation between industry and science in other countries. Seeking for a method to assist American manufacturers in utilizing scientific technology in place of the traditional rule-of-thumb production practice followed generally at that time, his idea took form in a practical plan for studying long-time industrial problems under the auspices of an educational institution.

In 1907, while Duncan was professor of industrial chemistry at the University of Kansas, he had the first opportunity to submit this concept to actual test. Its merits were proved during the next few years of experience in operating Fellowships on a modest scale. In 1910 he was invited by Andrew W. Mellon and Richard B. Mellon to come to the University of Pittsburgh to put his idea into effect on a broader basis. The operation of the Industrial Fellowship plan was begun here in 1911.

Encouraged by the success of Duncan's ideas, the Mellon brothers founded the Institute in 1913, and later placed its Fellowship System on a permanent basis. In 1915 the organization moved from its original small frame laboratory into the building that was its home until May of 1937. The institution carried on its work as a part of the University until it was incorporated in 1927. Since then its affairs have been managed by its own Board of Trustees through an Executive Staff. The Institute continues, however, to maintain close cooperation with the University.

The growth of the Fellowship System has been continuous from



the early days. At the present time there are in operation 80 Fellowships, requiring the services of 240 research workers. During the fiscal year 1938-39 the sum of \$1,104,405 was spent by the institution in pure and applied research. The total appropriation by donors during the past 28 years amounts to more than twelve million dollars.

The continuity of the Institute's research program attests the soundness of its Fellowship System. One Fellowship—that on petroleum refining—has been in uninterrupted operation since 1911. Thirty-nine of the present Fellowships have been maintained for five years or more, and of this number 20 have been active for 10 years, 11 have concluded 15 years or more of research, and 8 Fellowships are 20 years of age or older.

The merits of Duncan's ideas have been perceived in other institutions in this country and Canada. During the past decade several research foundations organized on similar lines have come into existence and reports indicate their great usefulness in helping to solve industrial problems.

### **Description of the New Building**

The space requirements of the Institute made necessary the present building of 3,500,000 cubic feet. The architectural treatment dictated that the structure be very wide in proportion to its height; three stories were accordingly built below ground level.

Much of the grace and sculptural quality of the facades is attributed to the fact that the columns are monoliths. The total weight of all 62 columns, including bases and capitals, each with an over-all height of more than 42 feet, is 4432 tons; this is the largest monolithic column installation in the world.

The outside of the building is in the form of a hollow square, with center and connecting wings in the shape of a cross. It is approximately 306 feet wide at the front, 227 feet wide at the rear, and 334 feet from front to rear. The outside sections and the interior center wing are 9 stories high, while the cross center wings are 4 stories high. The building was designed to include 4 interior courts as the main natural light sources. There are 1150 windows in these courts. There is a total of 350 rooms in the finished portion, certain parts having been held in reserve for completion as required.

The main entrance of the building is at the fourth floor level. The lobby, almost square in shape, provides in its simple Grecian style an appropriate transition between the monumental exterior and the utilitarian interior. The elevator doors, first observed just off the main lobby, are constructed of aluminum. This metal has been used for doors, window frames, stair handrails, trim, many laboratory fittings, distilled water pipe and fittings, and a large part of the roof.

The fourth floor is devoted chiefly to the administrative side of the Institute's work. Its feature is the library, which is finished in carved



English oak. The collection comprises at present about 16,000 volumes, but space for expansion to 100,000 volumes has been reserved. Executive staff officers and the general office occupy most of the remaining space on this floor.

The fifth to eighth floors are devoted to laboratory use, and the attic to ventilating equipment. While each floor has rooms set aside for special purposes, most of the space is occupied by the large and small laboratories adopted as standard. In design and equipment they represent the results of several years of experimental work. Their attractive appearance has been preserved by constructing the walls of terra cotta and by concealing pipes and ducts behind easily removable panels of cement-asbestos board.

The construction of the laboratory tables allows for most efficient arrangement, because any section may be removed without disturbing the remainder. The use of vertical T-slots gives great flexibility in the installation of service and drain pipes, shelving, and larger pieces of laboratory equipment. Standard services in each laboratory comprise air and gas; cold, hot and distilled water; vacuum, steam, and single and three-phase electric current. Currents of special characteristics can be supplied readily through a plugboard system. The fume-hoods, of novel design, are constructed of cement-asbestos board, and the sinks are made of a new material, "Karcite," developed at the Institute.

On the sixth floor are located the general storeroom, as well as the analytical department and the glass-blower's shop, the services of which are available to all research staff members. This floor also has constant temperature and humidity rooms. The furnace room, which occupies the space at the rear of the eighth floor, is intended for research on ceramic problems. The animal quarters for nutritonal and pharmacologic researches are also on this floor.

On the first three floors a large amount of space is provided for unit plant installations in individual rooms and especially in the large engineering laboratories, which occupy an L-shaped area two stories high. Here equipment and processes are developed to transmute laboratory methods into sub-commercial production. Special facilities are provided also for physical testing equipment and for certain general operations, such as crushing and grinding.

The Neo-Greek auditorium, seating 350 persons, is situated on the second floor. On this floor are located also machine, woodworking, pipe, sheet-metal, and electrical shops. Other facilities include a cold storage room and an electric furnace room.

A side entrance from the street to the third floor is intended primarily for use in connection with the auditorium. Here also are located a suite reserved for recreational activities, the photographic and drafting department, storage for special apparatus and instruments, the tele-

phone switchboards, and a smaller machine shop for the use of research workers.

### **Researches for the Public Good**

A number of fundamental investigations have been conducted by the Institute for the benefit of the professions and of the public—researches not usually suggested by industry, but comprehensive studies in the realm of pure science. These projects have been made possible by the financial support of the institution itself and through grants from other philanthropic organizations and by individuals with scientific sympathies. All the results of such investigation are published. The increased facilities of the new building will permit a greater scope in these activities.

The first project of this type, on smoke abatement, was carried out during 1911-14. A strong staff of scientists and advisory specialists studied all phases of the urban smoke problem. The research was recognized to be of such wide-spread importance that the work was resumed in 1923-24 and re-established in 1928. This Fellowship on air pollution has become a helpful information bureau for other organizations interested in smoke and dust control, and also has carried out numerous basic scientific studies on various phases of the subject. The outstanding result of the work thus far is to show plainly that present smoke abatement methods are inadequate to cope with the problem.

As one phase of the work on air hygiene, a special committee under the auspices of the Institute conducted a carbon monoxide survey in the Liberty Tubes, Pittsburgh, in 1932. It was found that the concentration during peak periods often exceeded a desirable maximum. As a result of definite recommendations to the County Commissioners, these conditions were improved.

A comprehensive investigation of sleep was carried on by the Institute during 1924-32. It was found that it is normal for an adult to make from 20 to 40 or more gross changes of posture in a typical night, while children shift more often.

In 1930 the Institute's Department of Research in Pure Chemistry, founded in 1923, began researches in the field of the cinchona alkaloids which, it was hoped, might result in the discovery of compounds of therapeutic value. Many new derivatives have been prepared and since 1933 biological and clinical data on the usefulness of these compounds in treating pneumonia have been accumulated by the medical collaborators. The results of this work show increasing promise in combating this disease, which is especially severe in and about Pittsburgh.

### **Improvements in Transportation**

If we consider broadly the history of transportation, it is apparent that the progress made within the last century far surpasses that of all

previous eras taken together. Advances within the last few decades have been at a still more astounding pace.

It is of interest to observe that progress is not uniform throughout all industries. In general, the oldest and best established tend to be more conservative and less subject to change. The industries of more recent origin, whose technologies have not yet assumed a more or less permanent mold, tend to accept innovation more readily—even to invite it—in order to meet their older competitors on more favorable terms.

The oldest and simplest form of transportation, by human energy, has remained practically static for centuries. The barrow and other devices for lessening the drain on human power go back into deep antiquity for their origins and have benefited by only minor changes. Man has rightly turned to other means of having his burdens drawn. But strangely enough, there remains in this commonplace method of transportation a fruitful field for research in the improvement of footwear.

For centuries the use of beasts of burden to draw loads stayed in a relatively unchanged state. During the past century the urge to effect mechanical innovations throughout industry resulted in considerable improvements in horse-drawn vehicles and implements. But at the beginning of the century the internal combustion engine sounded a knell to further progress in this old industry. The more aggressive and far-sighted companies turned their attention to the possibilities of mechanical power as a universal means of transportation.

For completeness, mention should be made of other forms of transportation: the bicycle, the motorcycle, and more recently the pipe-line. It is interesting to note that the great popularity of the bicycle in the last two decades of the 19th century led to the development of the pneumatic tire, which has represented an important contribution to the automobile industry.

Though this discussion is concerned chiefly with overland transportation, we should mention the more or less continual advances that have been made in marine construction. Ships of greater size, speed, and convenience are being developed, particularly for transoceanic voyages. In this case the competition has come chiefly from within the industry, and has not been the result of an inter-industry struggle, although the airplane is beginning to threaten in this field also.

### **Technological Evolution in Railroads**

Steam railway transportation in this country, which had its beginnings 110 years ago at Honesdale, passed through a lusty infancy and became an adult industry about the middle of the last century. A high stage of development was reached several decades ago, both for passenger traffic and for freight. Huge sums was invested in rolling stock of relatively standardized design.

Roughly twenty years ago competition from automobiles, buses, and



trucks began to develop. Still more recently, the airplane began to encroach upon certain types of railroad patronage.

Railroad traffic reached its peak in 1926. In the face of decreased revenue, some stand had to be made against these threats, represented by a ten-fold increase in passenger-cars and a twenty-fold increase in motor trucks between 1915 and 1928.

In passenger transportation comfort, safety, and speed have been emphasized, particularly within the last few years. Mile-a-minute daily runs have increased from about 2,000 miles in 1932 to nearly 50,000 miles today. Air-conditioning, improved interior conveniences, and stream-lined beauty have become widely adopted.

Freight service has become swifter and more dependable and improved methods of handling shipments have been developed. Speed of freight transportation has increased more than 60 per cent in two decades. At the same time the operating cost of hauling freight has decreased 40 per cent since 1920.

Nonetheless, it must be admitted that the railroads of this country have not been active in research. While they maintain control laboratories for the routine testing of materials, and carry on engineering development work, they have not pioneered in radical new developments. It is probable that more research is being conducted by the supplying industries than by the railroads themselves. It should be pointed out that the necessity for circulation of equipment—especially for freight—on the lines of other companies, requires that changes should be of such a nature as not to interfere with inter-company operation.

It is to be hoped that the realization of progress that can be effected through sustained, sound, systematic research programs will lead the railroads to whole-hearted support of this type of insurance against industrial obsolescence. In these activities particular attention should be directed to the needs of passengers and shippers, as well as to the more immediate problems of railroad operation. An example of what can be accomplished along these lines is to be seen in some of the British Research activities.

### **Research in the Automotive Field**

While the early steps in the evolution of the automobile were largely confined to Western Europe, the contributions of American engineers and scientists have brought this industry to its present state of development. From a total of 4,192 cars and trucks manufactured in the United States in 1900 the annual production rose to a peak of 5,621,715 in 1929, with a value of \$3,576,000,000.

Throughout the growth of this industry, engineering inventiveness has played a vital role and experimental programs of considerable magnitude have been supported by the manufacturers.

Not only must we consider here the laboratory and engineering research carried on by the automobile producers themselves, but also



those of their supplying industries, such as the petroleum, lacquer, rubber, glass, and steel manufacturers. The demands for higher quality have resulted in fast-drying lacquers, safety glass, improved fuels and lubricants, tires of greatly improved service, etc.

To mention projects at Mellon Institute which have aided in the further development of the automobile and its accessories, we may list: "Prestone" anti-freeze, improved brake fluids, a new type of carbon black for pigment in lacquers, new coolants for motors, chrome-plated aluminum, numerous important contributions to the technology of petroleum production and refining, improved plate glass and paints, new rubber accelerators, vinyl resins for use in safety glass which give increased protection at low temperatures as well as other advantages, synthetic resins of various types for a wide variety of applications, and improved tire chains and wire spokes. A number of other investigations have contributed to improvements in the following fields: brake linings, cotton tire fabrics, dielectrics, foundry core binders, gaskets, light alloys, natural gasoline, tire beads, and mohair.

### **The Aviation Industry**

In the airplane we have the youngest and most daring innovation in transportation. Here again research is a dominant factor in day-by-day progress. New constructional materials for structural members and skin, improved fuels, and more effective control instruments are being constantly sought with an aggressiveness second to none. The industry is so new and developments are coming so rapidly that every new batch of planes reflects the activities of the research scientist and engineer.

In this country manufacturers of airplanes, engines and propellers spent, according to figures released by the Aeronautical Chamber of Commerce of America, a total of \$44,000,000 in research and development during the last five years. This sum represents 9.4 per cent of the industry's gross sales during the same period.

Following the address by Dr. Bass, Mr. G. M. Sixsmith past president of our Club in a few well chosen words extended a vote of thanks to the speaker.

On motion, the meeting adjourned.

J. D. CONWAY, Secretary.

# **In Memoriam**

**J. A. BEATTIE**

**Joined Club December 19, 1918**

**Died April 6, 1939**

**JOHN M. CONNORS**

**Joined Club November 19, 1936**

**Died April 18, 1938**

**H. J. MULLIGAN**

**Joined Club February 23, 1939**

**Died March 27, 1939**

**JAMES S. BARRIE**

**Joined Club November 19, 1936**

**Died May 6, 1939**



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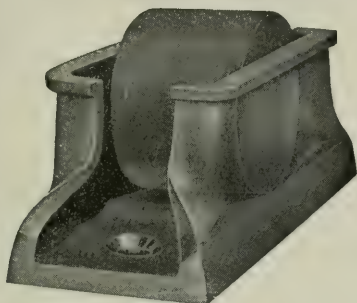
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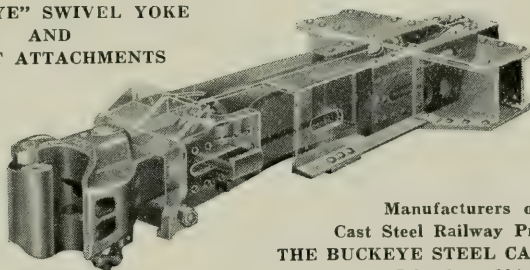


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Private Car Companies in the United States, Canada and Mexico.  
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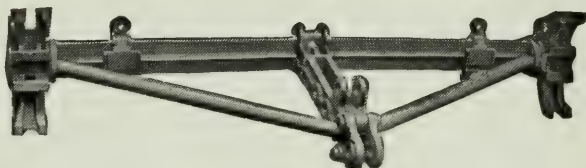
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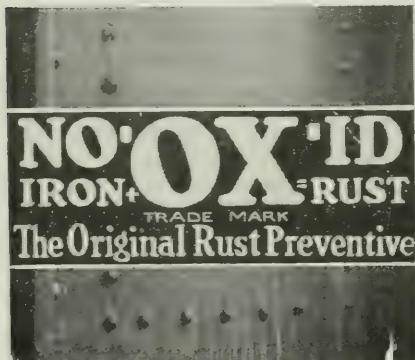


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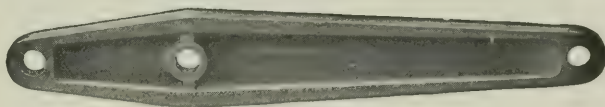
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|---------|--------------------------------------|---------------------------------|----------------------|
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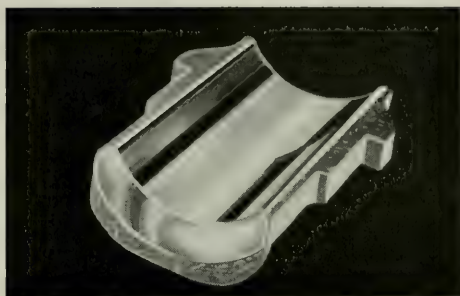
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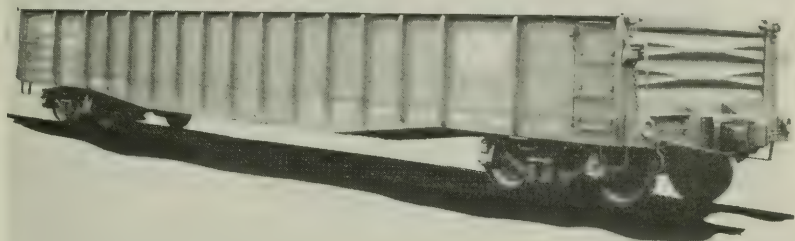
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**OF**  
**The Railway Club of Pittsburgh**

Organized October 18, 1901

Vol. XXXVIII  
No. 8

**Pittsburgh Pa., Sept. 28, 1939**

\$1.00 Per Year  
25c Per Copy

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|                       |                                  |
|-----------------------|----------------------------------|
| *J. H. McCONNELL..... | October, 1901, to October, 1903  |
| *L. H. TURNER.....    | November, 1903, to October, 1905 |
| *F. H. STARK.....     | November, 1905, to October, 1907 |
| *H. W. WATTS.....     | November, 1907, to April, 1908   |
| *D. J. REDDING.....   | November, 1908, to October, 1910 |
| *F. R. McFEATERS..... | November, 1910, to October, 1912 |
| *A. G. MITCHELL.....  | November, 1912, to October, 1914 |
| *F. M. McNULTY.....   | November, 1914, to October, 1916 |
| *J. G. CODE.....      | November, 1916, to October, 1917 |
| *D. M. HOWE.....      | November, 1917, to October, 1918 |
| *J. A. SPIELMAN.....  | November, 1918, to October, 1919 |
| H. H. MAXFIELD.....   | November, 1919, to October, 1920 |
| FRANK J. LANAHAN..... | November, 1920, to October, 1921 |
| *SAMUEL LYNN.....     | November, 1921, to October, 1922 |
| *D. F. CRAWFORD.....  | November, 1922, to October, 1923 |
| *GEO. D. OGDEN.....   | November, 1923, to October, 1924 |
| A. STUCKI.....        | November, 1924, to October, 1925 |
| *F. G. MINNICK.....   | November, 1925, to October, 1926 |
| *G. W. WILDIN.....    | November, 1926, to October, 1927 |
| E. J. DEVANS.....     | November, 1927, to October, 1928 |
| W. S. McABEE.....     | November, 1928, to October, 1929 |
| E. W. SMITH.....      | November, 1929, to October, 1930 |
| LOUIS E. ENDSLEY..... | November, 1930, to October, 1931 |
| *JOHN E. HUGHES.....  | November, 1931, to October, 1932 |
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| C. O. DAMBACH.....    | November, 1933, to October, 1934 |
| R. H. FLINN.....      | November, 1934, to October, 1935 |
| R. P. FORSBERG.....   | November, 1935, to October, 1936 |
| E. A. RAUSCHART.....  | November, 1936, to October, 1937 |
| G. M. SIXSMITH.....   | November, 1937, to October, 1938 |

\*—Deceased.

Meetings held fourth Thursday of each month except June, July and August.

# PROCEEDINGS OF MEETING

SEPTEMBER 28, 1939

The meeting was called to order in the Fort Pitt Hotel at 8:00 o'clock P. M., with President J. D. Beltz in the chair.

Registered attendance 228, as follows:

## MEMBERS:

|                    |                        |
|--------------------|------------------------|
| Adams, Frank W.    | Ganz, C. A.            |
| Allen, Earl M.     | Gelston, George A.     |
| Ambrose, W. F.     | Gilg, Henry F.         |
| Ames, L.           | Glaser, J. P.          |
| Anderson, J. P.    | Goda, P. H.            |
| Aulbach, A. J.     | Goldstrom, G. E.       |
| Balla, J. A.       | Goodwin, A. E.         |
| Bagaley, W. W.     | Groves, W. C.          |
| Balzer, C. E.      | Guinnip, M. S.         |
| Bauer, F. C.       | Hansen, William C.     |
| Beeson, H. L.      | Hautman, Hugo          |
| Bell, Charles W.   | Heed, H. L.            |
| Beltz, J. D.       | Heer, Walter           |
| Bender, H. P.      | Hilgert, T. J.         |
| Berg, K.           | Holmes, E. H.          |
| Berghane, A. L.    | Hunt, Lawrence         |
| Bevan, R. J.       | Jakovac, Victor P.     |
| Blyth, F. G.       | Jarres, F. A.          |
| Brown, Ralph W.    | Johnson, J. W.         |
| Buchanan, C. C.    | Karnes, W. T.          |
| Buckley, William   | Kearfott, W. E.        |
| Buffington, W. P.  | Kemmerer, R. R.        |
| Bull, R. S.        | Kentlein, John         |
| Burel, W. C.       | King, E. C.            |
| Campbell, F. R.    | Kirk, W. B.            |
| Carey, C. D.       | Koenig, W. A.          |
| Carr, T. W.        | Kramer, J. Kenneth     |
| Conway, J. D.      | Kroen, Vincent         |
| Coombe, A. B.      | Kromer, William F.     |
| Cramer, F. F.      | Kromer, W. W.          |
| Crawford, A. M.    | Kroske, J. F.          |
| Crenner, J. A.     | Lambert, W. J.         |
| Cudworth, H. D.    | Lanahan, Frank J.      |
| Dambach, C. O.     | Landes, B. D.          |
| Davis, Charles S.  | Larson, W. E.          |
| Dickinson, B. F.   | Lee, L. A.             |
| Dunham, C. W.      | Leonard, P. J.         |
| Durell, W. A.      | Lesko, Andrew          |
| Emery, E.          | Lincoln, R. B.         |
| Farlow, G. B.      | Little, S. G.          |
| Faustman, Paul L.  | Logan, J. W., Jr.      |
| Forsyth, George B. | Long, R. M.            |
| Fralic, C. F.      | Lott, O. C.            |
| Frushour, H. T.    | Lowry, William F., Jr. |
| Fry, L. H.         | Maines, Thomas J.      |

Malone, Frank B.  
 Masterman, T. W.  
 Matchett, H. K.  
 Maxwell, Thomas  
 Miller, J. S.  
 Miller, John  
 Miller, R. E.  
 Mitchell, W. S.  
 Morgan, Homer C.  
 Morrison, R. A. J.  
 Murphy, D. L.  
 Murray, Stewart  
 Musgrove, W. W.  
 McKinley, John T.  
 McLaughlin, H. B.  
 McQuiston, C. A.  
 Neff, P. W.  
 Paisley, F. R.  
 Peirce, W. B.  
 Pickard, S. B.  
 Posteraro, S. F.  
 Purchard, P.  
 Overholt, B. C.  
 Reagan, Henry V.  
 Renshaw, W. B.  
 Rief, Joseph  
 Rudisill, D. E.  
 Rupp, E. S.  
 Sarchet, Roger  
 Schako, E. J.  
 Schiller, John

Sheridan, T. F.  
 Sixsmith, G. M.  
 Smith, G. M.  
 Smith, Robert B.  
 Staats, Kenneth A.  
 Stack, John E.  
 Steigerwalt, R. W.  
 Steiner, P. E.  
 Stell, Melvin A.  
 Stevens, L. V.  
 Stoffregen, Louis E.  
 Stucki, A.  
 Suckfield, G. A.  
 Sutherland, Lloyd  
 Ternent, H. J.  
 Teskey, Dr. Walter J.  
 Thompson, F. H.  
 Tomasic, N. M., Jr.  
 Tracey, J. B. A.  
 Tucker, John L.  
 Tudball, J. H.  
 Turner, W. Scott  
 Unger, Dr. J. S.  
 Urtel, E. J.  
 Waskey, C. A.  
 Wheeler, C. M.  
 Wikander, O. R.  
 Wilson, James R.  
 Winslow, G. W.  
 Wright, John B.  
 Yarnall, Jesse

Yohe, J. K., Jr.

#### VISITORS:

Adams, L. J.  
 Adams, Russell H.  
 Anderson, J. W.  
 Angerman, J. C.  
 Armsey, G. F.  
 Bagaley, Robert F.  
 Baker, James V.  
 Becker, C.  
 Brady, W. K.  
 Bryere, F. H.  
 Burris, Walter C.  
 Caldwell, C. B.  
 Campbell, F. T.  
 Chellman, Harry R. L.  
 Conway, E. A.  
 Cotterell, S. M.  
 Dankmyer, F. C.  
 Davis, William B.  
 Dufour, C. C.

Eberle, E. J.  
 Eicher, Wilbert  
 Erfert, E. L.  
 Fanton, J. A.  
 Gallow, N. L.  
 Gardner, G. A.  
 Geis, Carl S.  
 Gillum, G. M.  
 Glauch, E. S.  
 Golloday, J. T.  
 Grego, John  
 Hackett, Raymond  
 Hansel, Cal  
 Helenkamp, R. F.  
 Hellman, Kurt  
 Herman, John  
 Jakovac, Leonard  
 Karnes, C. E.  
 Kohl, Howard M.

Kovach, G. A.  
 Kroen, Vincent, Jr.  
 Lewis, S. B.  
 Lindner, John  
 Machin, G. L.  
 MacMillan, W. A.  
 Marshall, L. L.  
 Masengill, James  
 Melody, J. C.  
 Miehl, W. J.  
 Miller, W. Edward  
 Paul, John N.  
 Porter, Norman  
 Reagan, Paul  
 Reay, E. N.  
 Reed, John W.  
 Reed, William C.  
 Ritehart, H. E.

Roscoe, Joseph C.  
 Ross, W. A.  
 Rudolph, H. V.  
 Searight J. C.  
 Shields, W. F.  
 Shoemaker, H. E.  
 Slater, G. W.  
 Smith, Roy  
 Smock, W. E.  
 Starkey, R. W.  
 Stierheim, W. H.  
 Suckfield, G. A., Jr.  
 Urban, C. E.  
 Van Wormer, G. M.  
 Vaughan, G. C.  
 Vollmer, W. K.  
 Ward, W. H.  
 Whittle, J. J.

Zimmerman, Loius

PRESIDENT: I am glad to see so many members here tonight after the Summer vacation. This display of interest in The Railway Club is gratifying indeed. We will dispense with the roll call as usual as well as the reading of the minutes of the last meeting which have already been published. Mr. Secretary, have you any applications for new members?

Bouve, Major Walter L., Jr., Staff Editor, Post-Gazette, 5311 St. James Terrace, Pittsburgh, Pa. Recommended by J. D. Conway.  
 Campbell, F. Telford, Electrician, Union Railroad Company, 4063 Greensburg Pike, Wilkinsburg, Pa. Recommended by E. D. Carter.  
 Clugh, C. I., Resident Inspector, Pennsylvania Railroad, 1013 Penn Avenue, Pittsburgh, Pa. Recommended by W. B. Moir.  
 Frushour, H. T., General Superintendent, Pennsylvania Railroad, Pennsylvania Station, Pittsburgh, Pa. Recommended by C. M. Wheeler.  
 Hangartner, U. H., General Agent, Union Mutual Life, 1301 Oliver Building, Pittsburgh, Pa. Recommended by J. D. Conway.  
 Harper, John T., Mechanical Superintendent, Montour Railroad Company, R. D. No. 1, McKees Rocks, Pa. Recommended by Henry F. Gilg.  
 Kirk, Walter B., Test Engineer, Westinghouse Air Brake Company, 1220 McClure Avenue, East McKeesport, Pa. Recommended by T. W. Masterman.  
 Larimer, A. L., Supervisor, B. & O. R. R. Co., 504 Atlantic Avenue, McKeesport, Pa. Recommended by George B. Farlow.  
 Marsh, A. R., Gang Foreman, Special Duty, General Superintendent Motive Power Office, Pennsylvania Railroad, 409 Hampton Avenue, Wilkinsburg, Pa. Recommended by W. B. Moir.  
 Miller, W. Edward, Research Assistant, U. S. Bureau of Mines, 4800 Forbes Street, Pittsburgh, Pa. Recommended by Dr. Walter J. Teskey.  
 Norris, Wilbur A., Field Representative, Division of Closed Banks, State Banking Department, 4818 Chatsworth Street, Pittsburgh, Pa. Recommended by J. L. Norris.  
 Rex, Frank R., Superintendent, Eastern Division, Pennsylvania Railroad, Pennsylvania Station, Pittsburgh, Pa. Recommended by C. M. Wheeler.  
 Stell, M. A., Track Foreman, B. & O. R. R. Co., 149 Baltimore Avenue, Etna, Pa. Recommended by George B. Farlow.  
 Stout, A. W., Chief Clerk to General Superintendent Motive Power, Pennsylvania Railroad, Fort Pitt Hotel, Pittsburgh, Pa. Recommended by W. B. Moir.  
 Turner, W. Scott, Sales Representative, A. M. Byers Company, Clark Building, Pittsburgh, Pa. Recommended by Lloyd Sutherland.

PRESIDENT: We are very glad to have that many applications and to welcome the gentlemen whose names have been presented. They will become members when their applications have been approved by the proper committee. Are there any further communications, Mr. Secretary?



SECRETARY: I might say, gentlemen, that it is never pleasant to present reports of this kind, and especially such a report as you will now hear. I am sorry to say we have had five deaths since our last meeting in May of this year:

J. S. Ekey, Engineer of Bridges, B. & L. E. R. R. Co.; R. M. Flocker, General Passenger Agent, Pennsylvania Railroad; A. B. Severn, General Manager, A. Stucki Company; James B. Tate, formerly General Manager, H. K. Porter Company; J. Young, Jr., Engine House Foreman, Pennsylvania Railroad.

PRESIDENT: We are all very sorry to hear this report of so many deaths. The Secretary will prepare proper memorials for publication in our monthly Proceedings.

Now this is the meeting when the Nominating Committee is to make its report. We will now hear from the Chairman of that Committee, Mr. Frank J. Lanahan.

MR. FRANK J. LANAHAN: After due consideration by the members of the Nominating Committee, it gives me great pleasure as Chairman of that Committee to present the names of the following gentlemen to be placed on the ticket and voted for at the annual election October 26, 1939:

#### **REPORT OF NOMINATING COMMITTEE**

FOR PRESIDENT—Karl Berg, Superintendent Motive Power, P. & L. E. R. R. Co., McKees Rocks, Pa.

FOR FIRST VICE PRESIDENT—J. W. Johnson, Superintendent, Railway Express Agency, Inc., Pittsburgh, Pa.

FOR SECOND VICE PRESIDENT—Charles J. Graham, President, P. & W. Va. Ry. Co., Pittsburgh, Pa.

FOR SECRETARY—J. D. Conway, Secretary-Treasurer, The Railway Supply Manufacturers' Association, Pittsburgh, Pa.

FOR TREASURER—E. J. Searles, Manager, Schaefer Equipment Company, Pittsburgh, Pa.

#### **EXECUTIVE COMMITTEE (12 to Nominate)**

Frank J. Lanahan, Chairman, (President, Fort Pitt Malleable Iron Co., Pittsburgh, Pa.)

A. Stucki, President, A. Stucki Company, Pittsburgh, Pa.

W. S. McAbee, Vice President and General Superintendent, Union Railroad Co., East Pittsburgh, Pa.

E. W. Smith, Vice President, The Pennsylvania Railroad, Pittsburgh, Pa.

Louis E. Endsley, Consulting Engineer, Pittsburgh, Pa.

F. I. Snyder, Vice President and General Manager, B. & L. E. R. R. Co., Pittsburgh, Pa.

C. O. Dambach, Superintendent, P. & W. Va. Co., Pittsburgh, Pa.  
R. H. Flinn, The Pennsylvania Railroad, Pittsburgh, Pa.  
R. P. Forsberg, Chief Engineer, P. & L. E. R. R. Co., Pittsburgh, Pa.  
E. A. Rauschart, Pittsburgh, Pa.  
G. M. Sixsmith, Superintendent, The Pennsylvania Railroad, Pittsburgh, Pa.  
J. D. Beltz, General Superintendent, B. & O. R. R. Co., Pittsburgh, Pa.

#### SUBJECT COMMITTEE (Two to Nominate)

M. A. Smith, General Manager, P. & L. E. R. R. Co., Pittsburgh, Pa.  
Warren C. Van Blarcon, Vice President, Aliquippa & Southern Railroad, Aliquippa, Pa.

#### RECEPTION AND ATTENDANCE COMMITTEE (Five to Nominate)

C. J. Code, Assistant to Chief Engineer, M. of W., The Pennsylvania Railroad, Pittsburgh, Pa.  
Harry Courtney, Shop Superintendent, P. & L. E. R. R., Co., McKees Rocks, Pa.  
A. B. Cressler, Superintendent Shops and Purchasing Agent, P. & W. Va. Ry. Co., Pittsburgh, Pa.  
William F. Lowry, Jr., Sales Agent, American Car and Foundry Co., Pittsburgh, Pa.  
Lloyd Sutherland, General Storekeeper, P. & L. E. R. R. Co., McKees Rocks, Pa.

#### FINANCE COMMITTEE (Two to Nominate)

James Nagel, Assistant General Superintendent, Montour Railroad Company, Coraopolis, Pa.  
Thomas E. Britt, Sales Representative, Ball Chemical Company, Pittsburgh, Pa.

#### MEMBERSHIP COMMITTEE (Four to Nominate)

John W. Davis, General Manager, Penn Iron and Steel Company, Creighton, Pa.  
C. G. Ingraham, Purchasing Agent, Pressed Steel Car Co., Inc., Pittsburgh, Pa.  
F. R. Paisley, Engineer M. of W., P. & L. E. R. R. Co., Pittsburgh, Pa.  
E. S. Rupp, Division Accountant, B. & O. R. R. Co., Pittsburgh, Pa.

#### ENTERTAINMENT COMMITTEE (No vacancies)

#### ADVERTISING COMMITTEE (No vacancies)

#### NOMINATING COMMITTEE

Frank J. Lanahan, Chairman,  
G. M. Sixsmith,                      W. F. Lowry, Jr.,  
F. I. Snyder,                        T. F. Sheridan.

PRESIDENT: Thank you very much Mr. Lanahan. Do we have any other nominations? There being no further nominations, the nomination is closed. Has any one anything they wish to say at this time?

MR. A. STUCKI: I heard Mr. Severn's name just mentioned as having passed away. A good many of us will remember him as an ardent worker in our Club, having served faithfully on various Committees.

Born 51 years ago, he entered the B. & O. Railroad service in 1904, worked there as an apprentice, then machinist, and seven years as draftsman, during which time he also held the position with the night classes at the Maryland Institute as Instructor of Mechanical Drawing. After that he was transferred into the B. & O. Valuation Department as Pilot Engineer for about one year, and then he accepted a position with the A. Stucki Company, which place he filled faithfully and admirably well for twenty-one years, until his sudden death.

He was a noble character all the way through, with his family, in business, and with his friends, and I am sure that all of you who knew him will join me in keeping him in loving memory.

PRESIDENT: Thank you Mr. Stucki. That was very nice. I know that Mr. Severn was a very good member.

Early this Spring it was announced that at this meeting we would probably go to the Planetarium, but as you may know it has not yet been completed. However, we expect to hold our November meeting in that building.

Turning now to the speaker of the evening, while I regret that I cannot tell you a great deal about him, we all know he is a real good fellow and that he started at the bottom in the Railways Express business and worked up to the very important position he now holds. It is now my pleasure and privilege to introduce Mr. R. W. Starkey, District Sales Manager of the Railway Express Agency, Incorporated, at Philadelphia, who will address you on the subject:

## **ROMANCE OF EXPRESS TRANSPORTATION**

**By R. W. STARKEY, District Sales Manager,  
Railway Express Agency, Inc., Philadelphia, Pa.**

Mr. President and members of the Railways Club of Pittsburgh: It is with a good deal of temerity that I speak on the subject of "Romance of Express Transportation", because, frankly, I sometimes think that you feel, with me, that we have too much romance in our transactions and I also feel somewhat like the small statue in a story I will tell you. Mr. Beltz said I might tell a story. This is a story about an Italian who was out of a job. Being a man of religion every day he went to church. He would go to early mass and immediately after mass would go over to the corner where the statue of his favorite saint, Saint An-



thony, stood. There he would pray to St. Anthony. It happened with such regularity that the priest took notice and passing by heard him say something like this: "Saint Antonio, whatsa matter when every day I come to and ask you help to get a job and I get no job and I got no money? Now, you got to do something about it." The priest thought to himself: "This Wop is likely to break that statue if he gets excited." So, he caused the large statue of St. Anthony to be replaced with a small statue. The next time the Italian came to church he went to the corner where this large statue of St. Anthony had been and after looking at the little statue said: "Say, kid, where's your pop?" That is how I feel in relation to the chap I am now substituting for.

Almost one hundred years ago in 1839 there was a chap in New York State who was employed at that time as a clerk in a railroad office. This fellow, like all clerks—and I was one myself—became tired of indoor work; not tired of work, but tired of work indoors. He had an idea and he put that idea into execution. His idea was that he could serve merchants between Boston and New York by going from one town to the other on the trains that operated between those cities taking orders for a concern, buying the material and bringing it back on the train. His business was of such magnitude that he conducted it in a carpet bag. That chap's name was William F. Harden. That was the foundation of express business. Then there was formed an express company in 1841 by two persons, one named Adams and the other named Wells. Those fellows operated their business on stages. There was not a great deal of romance in operating an express business on stages and a great deal less in operating in a carpet bag. Then came a situation in 1848 when they first discovered gold in California. We had the '49 gold rush and a great many people went to California because of that gold strike. In a period of something like ten years we found 500,000 persons migrating to the far West. At that time the population of the West consisted largely of Indians. Then we had this vast number of people migrate to that section and there arose a need for some form of transportation; that is, some quicker form of transportation. Remember, if you will, that in 1858 the Eastern rail lines terminated at St. Joseph, Missouri, not very far away, as you consider distance today, about two thousand miles. Transportation over that distance was accomplished by horse-drawn wagons. Aside from the many dangers that beset them in those days, and they were real dangers, there was no water en route. We did not have signs then "Pure Water, Approved by the State" or that sort of thing. Also, we had the savages making their last stand on the plains. Some people had ideas about what they might do to bring about a better means of transportation. A chap named William Russell started the first pony express and there were established one hundred and ninety stations from St. Joseph, Missouri, to Sacramento, California, for this method of express to carry messages



or small articles over that distance in the hitherto unconceived of time of ten days. A good many people did not believe that it could be done. Incidentally, it might be well to remark that the rate charged for the movement of that matter was five dollars per half ounce or ten dollars an ounce. One hundred and sixty dollars a pound, if you please, and they carried, saddle-back on ponies, fifteen pounds. What a gold mine that would be today. This chap Russell had so much confidence in the success of his project he bet fifty thousand dollars, which at that time was an astounding sum of money, that the first rider would come through in ten days time. The ten days time elapsed and no news was heard of the rider. They waited and thirty minutes before the expiration of the designated time there was no sight to be had of the rider in the distance. However, this man came into sight then and got there within a half minute of the time allotted to save Russell fifty thousand dollars. Back in 1861 this same pony express carried the message of Lincoln's Inauguration from St. Joseph, Missouri, to Sacramento, California, two thousand miles of untrodden West in seven days and sixteen hours. It did not take very long for people to perceive that if a fellow could get ten dollars an ounce for that service it would be a good proposition to build a railroad and they did. Eighteen months after the pony express started operating the first transcontinental railroad line was completed. The pony express riders, who deserve so much credit, then became what we term express messengers. From that time on means of development were studied and many express companies came into being because it was, apparently, a profitable enterprise. We, at one time, a company formed with twenty million dollars to take care of the express business and they lost seven million dollars and passed out of the picture. The business was then taken over by John Wells who formed the Wells-Fargo Express. However, we had at the end of the war in 1918 three large express companies: American, Wells-Fargo and Adams. A good many of you have had some contact with those companies. I did. I worked with two of them. In 1918, like the railroads, we were beset with many difficulties. In those days, incidentally, we delivered the bulk of our freight by horse and wagon. I did manage to get out and go to war and it was a great deal easier than the express business, I can assure you. At that particular time, due to the fact that the then Director General of Railroads would not deal with more than one company, the express companies were brought together so that on June 1st, 1918, occurred the discontinuance of these old companies and the formation of the American Railway Express Company. The American Railway Express continued in operation until February 28th, 1929, at which time, the railroads, exercising a clause in the contract, bought out, in its entirety, the express agency and named it the Railway Express Agency because, after all, that is truly what it is, it is an agency serving the railroads for express. So, on that date, we became the child

of the railroads. We do not mind being the child of the railroads, but we sometimes wish the railroads would consider us really its child and not consider us along the line of a stepchild.

We have grown to some extent from the days of carrying express by carpet bag, stage coach and pony to where we now represent 23,000 offices operating over 255,000 miles of rails, steamship and air lines. We have approximately 57,000 employees and 11,000 trucks for pick-up and delivery service which last year represented, out of 160,000,000 shipments, approximately ninety-seven per cent. Perhaps it might be well to say at this time, because so many of you are interested in the pick-up and delivery proposition, that we have had that established for a period of over sixty years. After being taken over by the railroads in 1929 we came upon that period with which you are all familiar, perhaps a little too familiar, and we suffered just as much as any other form of transportation. So, in 1933, we came down to a situation where we had lost virtually fifty per cent of our shipments and a like amount in revenue. Well, there is no romance when you lose half of your job and that is the position we found ourselves in. The question then was, what to do about it. Frankly, the situation was this: If somebody did not do something about it there would not be any more jobs for the thirty-five thousand express men employed at that time. I want to, personally, say that somebody did do something about it. Just what was that something that is really my message to you tonight; how a transportation company with fifty per cent drop in revenue and fifty per cent drop in business came back, because that is exactly what we have done. Just how far we have come back today you can probably arrive at from these figures: There are fifty-seven months that have transpired since 1933 and in this particular department in which I am employed having to do with sales activities we have only had four out of those fifty-seven months when our business has not shown an increase over the same month in the preceding year. You might say, "Well, in 1933 you must have had an upturn in business to sustain itself up to the present day." That is not the fact. Sure, we had a flurry in 1937, but it subsided in 1938 despite the fact that in 1938 our business was better than the business we had in 1937. Again you might ask the question: "Just how did you do it?" Well, there were several means and methods used. First, we had some rate adjustments. I do not refer to rate adjustments of (February 15, —?) when we asked the Interstate Commerce Commission for permission to change our rates, but the adjustment of rates I refer to particularly are those which came about by consent of the railroad lines, to allow us to bring back business that had left us to go to trucks and which we could recapture before it became indelibly fixed with the trucks. There have been changes in business every day and unless we keep pace with these changes we would not be able to serve them any longer. In certain businesses they have processing methods

and certain process hours which require materials to be taken from one processing plan to another in a certain given time. It is most unfortunate indeed, with the volume of business these people have, that our freight business does not answer their demands. It answered their demands once upon a time when this processing proposition was not so exacting. but they stepped up their processing speed and when they found we could step up transportation speed we came into the picture in most of those cases and did, with the assistance of a good many of you in this room, recapture much of that business. We have had times when we perhaps did not handle our business as expeditiously at junction points as we might have and other failures but we have conscientiously tried to eliminate sources of trouble. We developed a means of serving our owners directly. We brought about pick-up and delivery service. It is unfortunate, in this State of Pennsylvania, we have been denied that right despite the fact that we did business here for over half a century. That was due to the Public Utility Commission. They probably felt they should give that business to a group of their "constituents"—I say "constituents" for want of a better word—but, at least, they confined it to truckers. It has placed the railroad at the mercy of the trucker who had a permit and charged what he wanted for delivery and pick-up service. In other States we do not have that and we have, last year, by our service, been able to earn for the railroad better than three and one-half million dollars. When you consider the fact that the railroads own the express company lock, stock and barrel, it is a peculiar thing they do not exercise the use of that agency in their service. They might make better use of that service by the use of the agency itself. Again, we have other things we brought in. For example, the airplane. I should like to say something about this. It was said last week—this will give you some idea and you passenger people will be particularly interested in it I know—in 1931 the gross payments for air-express to the express agency were sixty-four thousand dollars; in 1939 the anticipated revenue to the express agency, gross, from air traffic, will be approximately two and one-half million dollars. Now, there may be many of you who will give pause, consider these figures, and say: "You are taking business away from us and yet you are our child." Our answer to that is no, we know from the very character of the business we handle for the air lines it is new traffic developed in many instances that is hauled over rails before it is turned over to the air lines for transportation. And, there we come to a salient feature of my talk tonight, this matter of selling. We will call it, for want of better words, "Creative Selling."

Sometimes, when discussing this subject, persons tread on my toes. I said to a man tonight, in referring to this subject, that I did not agree with him that we should follow the form of selling that has been practiced for years. I will give my reasons. There was a time when a traf-



fic man might have come to Bill, Tom or John with a volume of traffic by reason of good will. If he has that good will today it is by reason of some ulterior motive or influence, but in the main, the volume of traffic today is routed over the line that gives the most expeditious movement. The traffic man today is keenly alive to showing a savings in dollars and cents. It is his job. You cannot come in and say: "How about a few more cars over our line?" It does not work any more. You have to show them something. Here is something in the way of a picture of creative selling. Let me tell you a story of a firm in Chicago that handles bearings. They contemplated taking on a certain line. It was quite an extensive line and it would cost fifty thousand dollars to stock that particular type of bearing, in addition to which there was no certainty at all that this firm would be able to sell the bearing. One of our people went to this firm and said: "Did you ever consider the use of air express?" He said, "No." Our representative said, "If these bearings are stocked in Chicago we can give you delivery of bearings to any point in the country within twenty-four hours. Why tie up fifty thousand dollars in inventory when you can maintain a small stock at a central point and distribute by our service?" He sold the man on it and that particular firm became one of our best customers out of Chicago. That is creative selling. We can tell people about this railway express agency. We try to do that very thing and tell them what that express agency is. You know you can lead a horse to water but you cannot make him drink. We tell a man about the express agency. He knows about that. Then tell him what it can do and he knows that. The next thing to do is to sell that man on the idea of using the railway express agency. Your problem, as I see it, and I come in contact with a good many of you, is not much different from ours; it is to show that you have something the other fellow has not got. If you cannot do that there is not much use in trying to sell your service. The old friendship basis for doing business is out. You go in to try to induce a man to use your service and you say to yourself, "How can I induce this man to use the railway express? Is there something I have that he needs?" You must show that man something you have that he needs. That is something we have to do more than you. We have a pretty high rate. It is a far cry from the pony express and those fellows who went across two thousand miles of undeveloped land by pony or stagecoach. It is something of a far different type. Now it is drawn by airplane motor. Those fellows who preceded us left a heritage here to follow, but they did not have our competition to overcome. However, they did have obstacles to overcome which perhaps, in their day, were just as great as the obstacles we have to overcome. I think it is up to us to leave a heritage for those who follow us just as well as it was done by those who were ahead of us. There is only one way to do it. I said we lost a good deal of our revenue and our



shipments. In the picture of the railway business today it shows a great many of those things happened to them. Unfortunately some of those things which happen to us are through no fault of management. It is a condition which was brought about through no fault of ours and I will say something else about this. There are a good many people in this country who believe that the best thing possible which could happen to the railroads would be for them to fall into government ownership. You do not believe it. You are railroaders and know what happened before. The fact still remains that a good many people think that way and it is obvious why they do. You know they can take an agency like the Retirement Board and create a good many jobs so you can see what would happen with the railroads. I do not think, if they took the railroads, that we would ever come out. You can picture what would happen if it fell into the hands of dreamers of that type. What would happen and what we have to guard against is this: Those people, to take over, must have an excuse and the best possible excuse would be failures of service enough to warrant taking over the railroads. I just met a fellow today that represented a tin plate plant in St. Louis and one of the first things he said was, "I do not think the railroads are going to stand up if we get very busy because I am short of cars right now." That is the condition we find ourselves in today. If we can only pass by this peak period, take the traffic as it comes to us and move it successfully lots of our competition is going to fade away because the competition we do have is going to other forms of employment. Because we may not have prosperity, neither have they. Less than one per cent of truck lines in the country made money last year. People do not stay in business unless they have business unless it is a railroad. We should struggle hard and try to leave behind us a heritage which should be as good as the heritage which was left before us. I thank you.

PRESIDENT: Thank you, Mr. Starkey. Does anyone have any questions they desire to ask Mr. Starkey about Railway Express?

MR. C. O. DAMBACH: I would like to ask what percentage of this increase he refers to is attributable to the air lines?

MR. STARKEY: Less than one per cent. Only one per cent of our total weigh-bills is air line. That revenue of two and one-half million is gross. That includes our service charges. We will probably come out of that with somewhere in the neighborhood of one hundred thousand for the handling.

MR. DAMBACH: What is the weight you can take by air?

MR. STARKEY: I would not say there is any particular weight limit. The main factor is whether or not the plane can accommodate the shipment.

MR. DAMBACH: I understand they have some new planes going to South America taking very large shipments.

MR. STARKEY: I assume you refer to Pan-American planes. In this country we are sole representatives of air lines including the Pan-American which is, after all, an export line. We are the only people who have the contract for pick-up and delivery service for them. Manifestly that contract is just as good for them as it is for us. We have 23,000 offices to serve their airports.

MR. DAMBACH: The freight rate of one cent a ton mile, how does that compare with express?

MR. STARKEY: That does not compare with us. You people make us hold our rates higher than yours. I might say to you that in our contract with the railroad we are compelled to maintain rates not lower than double your first-class freight rates. Of course, there are exceptions to that and the exception is where there is a volume of traffic you want to bring back to the rail line which can only be brought back by utilizing the express service and that traffic can only be secured by making the charge less than that minimum charge I mentioned of double your first-class freight rate.

I might say something else about that. After all, while this is possibly some of my own idea, it is founded, I trust, on good sense. You know this rule I refer to of double the first-class freight rate is, after all, a very bad thing for us and here is why: Let me tell you an experience I had last year. Take a commodity which emanates in my territory in particular, in the East. It might interest you to know the revenue of that particular commodity last year was seven hundred and some odd thousand dollars. We know that that business is getting away from us in large quantities and who is hauling it? The trucks. So we set about to establish rates, quantity rates as we call them, to induce these people to give back to our agency that traffic. I will say that all the systems in the East agreed to have that done. Then we struck some of the railroads in the South and they say to us, "No, because that rate would be less than our freight rate." Of course we asked them the question: "How much of this commodity are you moving in freight?" We knew, and you know, how much—None—to Southern destinations. This was less-carload business and their freight is carload and yet they stood on that ground and refused to agree to that rate allowing the trucks to go into that particular neighborhood and continue to get this traffic. If those lines would agree to allow us to reduce our rates to come somewhere near that would be avoided. We had some particular areas where we could get within twenty-five cents of the truck rates and in those areas we did break down some of that competition and I think we will break down more. Last year a rate went into effect to

150 destinations and we got sixty-five thousand dollars in business at the rate. This year we have got the rate back again. I say to you people here who are interested in traffic problems of the railroad to remember that we do not ask for a rate better than the truck's best rate. Where we cannot get better than the truck's rate we do not want that business. But, where we can get business to come back and move on the rails and can get it at better than the truck rate we call your attention to the fact that that rule of not lower than double your first-class freight rate is a quite insurmountable obstacle.

MR. DAMBACH: I had a personal experience where business was offered to a trucking company at express rates and they were not interested at twice the express rates, and would not take the business.

MR. STARKEY: That is rather hard to believe. If you say so, it must be so. It may be that is a locality where there is a special service factor. You say it was tendered to them and they would not handle it?

MR. DAMBACH: That is right.

MR. STARKEY: Here is something that has hit us. Maybe your case is among those we should go after. We have many instances of this kind where, by reason of minimum passenger business on some freight lines service has been curtailed and where you curtail passenger service that curtails our service and we do not get in there. In this particular locality there is a case which Superintendent Sixsmith knows about. He has tried to correct for us but the railroad has not yet been able to correct it and we have been losing business at several agencies by not being able to get our deliveries on the street in those points until afternoon. A truck comes in in the morning. In cases of that kind it is not a question of freight rate as much as it is a question of service.

MR. DAMBACH: I appreciate that, but in this particular case the company takes the truck but will not take express traffic out.

MR. STARKEY: They refuse to handle any express traffic?

MR. DAMBACH: That is right.

MR. STARKEY: Maybe it is on the ground that they do not want to handle competitive traffic.

MR. DAMBACH: The rate is cheap. Too cheap. They go in and take the freight business and when you try to make a deal to handle your business then the rates go way up.

MR. STARKEY: They go into a particular locality and solicit freight and get that and solicit express and get that, but when you ask them to handle our business they do not want it?

MR. DAMBACH: That is right.



MR. STARKEY: I will ask you a question in return. You are a trucker—

MR. DAMBACH: I am not a trucker.

MR. STARKEY: Let us assume you are and you come in and take from the railroad its business and then take the business from the express company. I come in from the express company and ask you if you would like to handle our business. What would you say? I would say no, if I was a trucker, because I already have the cream of it. In a case of that kind the trucker has probably established what amounts to practically a monopoly. It certainly seems unfair, but if you can conceive of any more unfair decision than that decision denying us the right to perform for the very people who owe us a pick-up and delivery service I would like to hear of it. I would like to have someone tell me anything that is more unfair. It is simply a piece of legislation that was done for a purpose, as you all know, but there is nothing you can do about it any more than you can about the problem of the trucking situation. What is the first thing that meets your notice in the Act? In the Motor Carrier Act they exclude you from filing a rate that includes a product of the farm or a product of the sea. At one fell stroke they take out of circulation approximately twenty per cent of the railroads' haul. Then, when we go down and file our tariff thirty days in advance the trucker looks at that tariff. If he can get the business by offering a rate a couple of cents lower there is nothing we can do about it. That is where we find ourselves. For hauling products from the farm and products from the sea we have trucks from the pastures down to the seashore that pick up and deliver loads, but we can do nothing about it if it is a product of the farm or a product of the sea.

QUESTION: Take the Southern situation. These trucks come up North with loads of food and loads of fish and they do not go back empty. They take back loads of silk and loads of processed goods. Of course they have to file a rate, but it is murderous competition.

MR. STARKEY: That is true.

QUESTION: I was interested in your statement that less than one per cent of the truck tonnage was profitable last year.

MR. STARKEY: Less than one per cent of the truck lines that operated made any money.

QUESTION: Truck lines?

MR. STARKEY: Yes.

QUESTION: Here is the thing that appeals to me. Railroad rates have been reduced in a good many cases and the trucker gets the business and retains it by making a lower rate than the railroad. There should be a tendency for them to increase their rates if they have lost



money in the past. A recent investigation shows that certain States are raising taxes on the highway and limiting the size of loads on trucks. It looks to me as if it is inevitable that the trucker must narrow his position.

MR. STARKEY: Here is what happens. The Commission compels the trucker to raise his rate, and in some cases on some commodities they have raised them. You are after carload traffic and that is what the trucker is after. That is the grave factor in this situation. What does he do? He does not raise his rate on that particular commodity. What he does is to go to the man and say "You have a large volume moving, we will say, from Durham, North Carolina. I am not going to publish the rate here, but I am going to make a contract with you which must, by law, be of six months or more duration." The contract is filed in Washington and that contract says this man will haul that commodity for not less than a certain sum. Usually it is a ridiculous sum so that you and I cannot quote a rate to get that business. That is the contract trucker. We are against him, of course, but the common carrier trucker is also against the contract trucker and hopes to legislate him out of the picture. Whether they do or not we do not know.

QUESTION: What do you think of the future of the trucking business?

MR. STARKEY: I think—and after all, this is my own reasoning and I have nothing to substantiate it, but just my own opinion which I am giving to you for what it is worth—if we come back to any degree of normalcy such as the situation of 1925, 1926 and 1927, a lot of these things will take care of themselves. There are a lot of truckers praying to get a white man's job and an opportunity to get off a truck but they have to stick to it to avoid starvation at the present time. You can get rid of a lot of competition there. The thing to do is once you get rid of that competition and regain that business we should, of course, hold it. During the depression a man's aunt would die and leave him some money with which he would buy a truck and go into the trucking business. Many of those fellows inherited money and bought trucks. That is how they got started in the trucking business. One of those fellows admitted that he was making five to seven dollars a day for driving five or six hundred miles hauling coal. It is just too cheap. He has no overhead. We cannot meet that.

MR. HENRY F. GILG: I think there is something coming into the railroad industry which began on April 13th when Senator Burton Wheeler said on the air to a woman in the audience, in effect, that she would not be in favor of government ownership of railroads if she were to meet the politicians which he had met in Washington. Senator Wheeler has changed his attitude on that. Some time since then he made a very good speech in the Senate covering those points. The

Honorable J. D. Eastman, several years ago, said that the time was not ripe for taking over the railroads. Mr. Eastman is now President of the Interstate Commerce Commission and has been for three years. He will endeavor to get the different forms of transportation correlated and fix rates. If that is carried out and if they go along with their present plan or program all that is needed is that these gentlemen sitting here get after their congressmen and help that thing along. I have been working on that for seventeen years. I have talked to the most capable men in the Senate and the newspapers and others. The Herald-Tribune had an editorial on the 19th of this month making "A Challenge to Railroads." It is easy to see that the editor does not know the first thing about what the railroads are up against. He talks as though they had made no advances in the past sixty years. There is no man in this country who has seen more of it than I have, from a traveling man's point of view, and it is amazing what the railroads have done against the forces that have been trying to put the railroads into government ownership. It is almost unbelievable. An editorial in the St. Paul Dispatch, talked about the expense or cost of transportation between the producer and the consumer. You know that years ago it was said that when we have the parcel post we can get our produce direct from the farmer to the home. Anyone with sense is not going to send money to the farmer and take a chance on the kind of goods he might receive. It was not long before it was evident that it was merely to take business away from the express company and the railroad. There are people today who use parcel post and actually pay more money than they would have to pay the express company.

MR. STARKEY: Yes, we know that.

MR. G. M. SIXSMITH: Gentlemen, the President has asked me to speak for the membership in appreciation of Mr. Starkey's wonderful presentation. After hearing his address on the romance of the express industry, the development of that industry over a period of years and just what it is doing in the progress of the transportation industry as a whole, I think we all know more now about the express industry and transportation on the highways in general than we did before. I should like to take this opportunity, on your behalf, to express to Mr. Starkey, personally, how much we appreciate his enlightening address this evening and ask him to take back to the officers of his company our thanks and expression of appreciation for having made it possible for him to be here and extend to them the greetings of this Club.

In conclusion may I ask you to give Mr. Starkey and his company a rising vote of thanks and a generous expression of applause.

(Rising vote of thanks and enthusiastic applause).

PRESIDENT: There being no further business the meeting stands adjourned. A buffet luncheon was then served.

J. D. CONWAY, Secretary.



# **In Memoriam**

**J. S. EKEY**

**Joined Club January 26, 1933**

**Died June 3, 1939**

**R. M. FLOCKER**

**Joined Club November 22, 1934**

**Died June 2, 1939**

**A. B. SEVERN**

**Joined Club January 23, 1919**

**Died June 19, 1939**

**JAMES B. TATE**

**Joined Club September 25, 1914**

**Died July 20, 1939**

**J. YOUNG, JR.**

**Joined Club November 22, 1934**

**Died April 19, 1939**





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No. 9.

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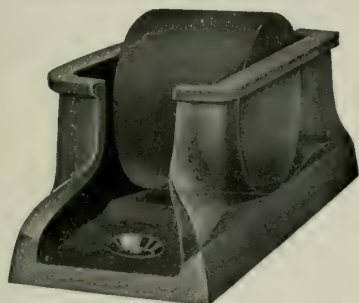
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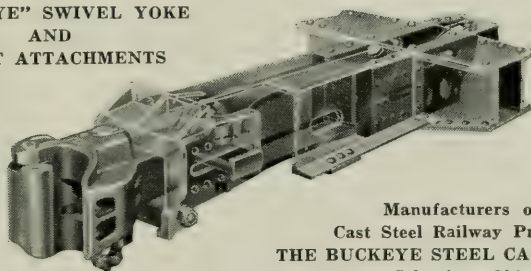


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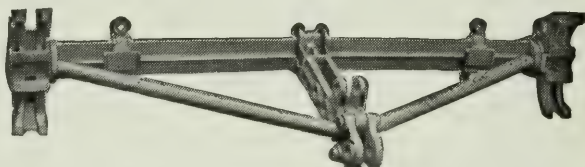


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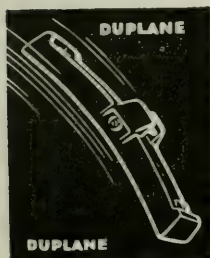
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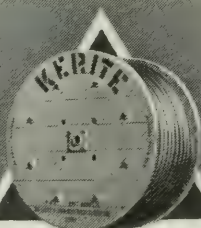
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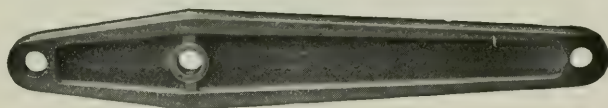
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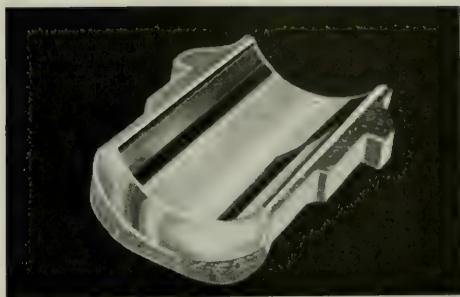
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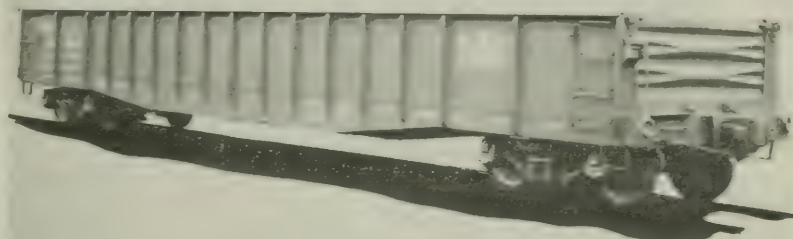
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**OF**  
**The Railway Club of Pittsburgh**

Organized October 18, 1901

Vol. XXXVIII  
No. 9

**Pittsburgh, Pa., Oct. 26, 1939**

\$1.00 Per Year  
25c Per Copy

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|                   |                                  |
|-------------------|----------------------------------|
| *J. H. McCONNELL  | October, 1901, to October, 1903  |
| *L. H. TURNER     | November, 1903, to October, 1905 |
| *F. H. STARK      | November, 1905, to October, 1907 |
| *H. W. WATTS      | November, 1907, to April, 1908   |
| *D. J. REDDING    | November, 1908, to October, 1910 |
| *F. R. McFEATERS  | November, 1910, to October, 1912 |
| *A. G. MITCHELL   | November, 1912, to October, 1914 |
| *F. M. McNULTY    | November, 1914, to October, 1916 |
| *J. G. CODE       | November, 1916, to October, 1917 |
| *D. M. HOWE       | November, 1917, to October, 1918 |
| *J. A. SPIELMAN   | November, 1918, to October, 1919 |
| H. H. MAXFIELD    | November, 1919, to October, 1920 |
| FRANK J. LANAHAN  | November, 1920, to October, 1921 |
| *SAMUEL LYNN      | November, 1921, to October, 1922 |
| *D. F. CRAWFORD   | November, 1922, to October, 1923 |
| *GEO. D. OGDEN    | November, 1923, to October, 1924 |
| A. STUCKI         | November, 1924, to October, 1925 |
| *F. G. MINNICK    | November, 1925, to October, 1926 |
| *G. W. WILDIN     | November, 1926, to October, 1927 |
| E. J. DEVANS      | November, 1927, to October, 1928 |
| W. S. McABEE      | November, 1928, to October, 1929 |
| E. W. SMITH       | November, 1929, to October, 1930 |
| LOUIS E. ENDISLEY | November, 1930, to October, 1931 |
| *JOHN E. HUGHES   | November, 1931, to October, 1932 |
| F. I. SNYDER      | November, 1932, to October, 1933 |
| C. O. DAMBACH     | November, 1933, to October, 1934 |
| R. H. FLINN       | November, 1934, to October, 1935 |
| R. P. FORSBERG    | November, 1935, to October, 1936 |
| E. A. RAUSCHART   | November, 1936, to October, 1937 |
| G. M. SIXSMITH    | November, 1937, to October, 1938 |

\*—Deceased.

Meetings held fourth Thursday of each month except June, July and August.

# PROCEEDINGS OF MEETING

OCTOBER 26, 1939

The Annual Meeting was called to order at the Fort Pitt Hotel, Pittsburgh, Pa., at 8:00 o'clock P. M., with President J. D. Beltz in the chair.

Registered attendance 480, as follows:

## MEMBERS

|                      |                         |
|----------------------|-------------------------|
| Ackley, J. O.        | Chase, D. K.            |
| Adams, Frank W.      | Chilcoat, H. E.         |
| Adams, W. A.         | Christian, George B.    |
| Ambrose, W. F.       | Cipro, Thomas           |
| Ames, L.             | Clark, C. C.            |
| Anderson, J. P.      | Clements, F. C.         |
| Ansman, J. M.        | Clugh, C. I.            |
| Ashley, F. B.        | Code, C. J.             |
| Aulbach, A. J.       | Conway, J. D.           |
| Babcock, Frank H.    | Coombe, A. B.           |
| Bagaley, W. W.       | Courtney, H.            |
| Balla, J. A.         | Crawford, A. B.         |
| Balsley, V. I.       | Crenner, J. A.          |
| Balzer, C. E.        | Cressler, A. B.         |
| Barr, H. C.          | Cruikshank, J. C.       |
| Baumann, E. G.       | Dalzell, W. E.          |
| Beam, W. H.          | Dambach, C. O.          |
| Beeson, H. L.        | Davis, Charles S.       |
| Bell, Charles W.     | Dean, E. E.             |
| Beltz, J. D.         | Dean, R. W.             |
| Berg, Karl           | Dean, W. A.             |
| Binau, R. J.         | Dickinson, T. R.        |
| Bishop, D. B.        | Diven, J. B.            |
| Bishop, M. L.        | Duffley, F. M.          |
| Blaine, C. H.        | Dunham, C. W.           |
| Blyth, F. G.         | Dunlap, Glenn           |
| Boyd, John R.        | Edsall, S. D.           |
| Braun, O. F.         | Emery, E.               |
| Brown, Bernard R.    | Endsley, Prof. Louis E. |
| Brown, C. C.         | Evans, T. M.            |
| Brown, H. C.         | Farmer, C. F.           |
| Brown, Ralph W.      | Faustman, Paul L.       |
| Bryant, Lewis J.     | Fieldson, P. H.         |
| Buffington, W. P.    | Fischer, G. E.          |
| Bull, R. S.          | Fitzsimmons, E. J.      |
| Burel, W. C.         | Fleckenstein, A.        |
| Burnette, G. H.      | Forsberg, R. P.         |
| Byrne, W. L.         | Forsythe, George B.     |
| Campbell, F. R.      | Fox, George W.          |
| Campbell, F. Telford | Fralic, C. F.           |
| Campbell, W. T.      | Frauenheim, Pierce      |
| Carr, T. W.          | Friend, E. F.           |
| Chaffin, H. B.       | Fry, L. H.              |



|                         |                     |
|-------------------------|---------------------|
| Ganz, C. A.             | Lanahan, J. S.      |
| Gardner, G. R.          | Landes, B. D.       |
| Gelston, George A.      | Larson, W. E.       |
| Gilbert, William J.     | Laurent, Joseph A., |
| Gilg, Henry F.          | Leonard, C. W.      |
| Glaser, C. J.           | Lesko, A.           |
| Glaser, J. P.           | Lewis, Benjamin     |
| Glenn, J. H.            | Lewis, Herbert      |
| Goldstrom, G. E.        | Livingston, W. C.   |
| Goodwin, A. E.          | Long, R. M.         |
| Greek, Joseph           | Lott, O. C.         |
| Greenslade, G. R.       | Lytle, Lee J.       |
| Grove, C. G.            | Maines, Thomas J.   |
| Groves, W. G.           | Mannion, M. F.      |
| Haller, Nelson M.       | Marsh, A. R.        |
| Hamilton, W. H.         | Matchett, H. K.     |
| Hansen, William C.      | Mattern, W. E.      |
| Harper, J. T.           | Megee, C. R.        |
| Hautman, Hugo           | Metzger, C. L.      |
| Hawes, W. C.            | Millar, C. W.       |
| Hayward, Carlton        | Miller, J. S.       |
| Heer, Walter            | Miller, John        |
| Hengst, Guy E.          | Mills, C. C.        |
| Herrold, A. E.          | Mitchell, W. S.     |
| Hess, Charles A.        | Moir, W. B.         |
| Hewes, John, Jr.        | Monk, J. T.         |
| Hill, John A.           | Morgan, Homer C.    |
| Hilstrom, A. V.         | Morrison, R. A. J.  |
| Holmes, E. H.           | Mulvey, J. I.       |
| Hoopes, E. L.           | Murphy, D. L.       |
| Hoopes, R. E.           | Musgrove, W. W.     |
| Hopper, George          | McAndrew, R. E.     |
| Huber, C. G.            | McCully, D. L.      |
| Hutchinson, George, Jr. | McHail, J. L.       |
| Hykes, W. H.            | McKim, Hollis       |
| Ingraham, C. G.         | McKinley, John T.   |
| Irvin, P. J.            | McKisson, R. W.     |
| Jarres, F. A.           | McLaughlin, H. B.   |
| Jeffrey, John           | McMullin, H. R.     |
| Johnson, Ira S.         | McPherson, A. R.    |
| Johnson, J. W.          | McPherson, K. W.    |
| Johnson, LeVere H.      | McQuillen, J. J.    |
| Karnes, W. T.           | McQuiston, C. A.    |
| Kearfott, W. E.         | Nagel, James        |
| Kelly, Harry B.         | Neff, P. W.         |
| Kelly, L. J.            | Nieman, Charles J.  |
| Kennedy, G. N.          | Noble, Jesse A.     |
| Kentlein, John          | Noonan, Daniel      |
| Klassen, F. G.          | Orbin, G. N.        |
| Koenig, W. A.           | Overholt, Bruce     |
| Kromer, W. W.           | Paisley, F. R.      |
| Kromer, William F.      | Peirce, W. B.       |
| Kuhn, S. H.             | Perreas, S. J.      |
| Lanahan, Frank J.       | Porter, H. N.       |

Posteraro, S. F.  
 Purchard, Paul  
 Ralston, J. A.  
 Ramsey, A. Milne  
 Reagan, Henry V.  
 Reiser, Frank  
 Rex, F. R.  
 Reymer, Charles H.  
 Roberts, E. L.  
 Ross, H. A.  
 Rumbarger, F. A.  
 Rupp, E. S.  
 Rushneck, G. L.  
 Rutter, H. E.  
 Ryan, Willis  
 Sarchet, Roger  
 Schadt, A. D.  
 Schaffer, W. E.  
 Schauers, R.  
 Schiller, John  
 Schmitt, Raymond F.  
 Schrecongost, C. P.  
 Searles, E. J.  
 Seibert, W. L.  
 Sekera, C. J.  
 Servais, F. W.  
 Shellenbarger, H. M.  
 Sheridan, T. F.  
 Showalter, Joseph  
 Sixsmith, G. M.  
 Smith, Charles F.  
 Snyder, F. I.  
 Staats, Kenneth A.  
 Stell, M. A.  
 Sterling, C. C.  
 Stevens, L. V.

Stoffregen, Louis E.  
 Stout, A. W.  
 Stucki, A.  
 Sutherland, Lloyd  
 Stype, W. G.  
 Terkelsen, B.  
 Ternent, H. J.  
 Terry, Edward  
 Thomas, George P.  
 Thompson, F. L.  
 Tipton, G. M.  
 Tomasic, N. M., Jr.  
 Tracey, J. B. A.  
 Triem, W. R.  
 Truschel, Joseph H.  
 Tryon, I. D.  
 Unger, Dr. J. S.  
 Van Vranken, S. E.  
 Van Woert, F. E.  
 Von Pein, A. N.  
 Vowinkel, Fred F.  
 Wark, J. M.  
 Waskey, C. A.  
 Webster, H. D.  
 Welch, E. M.  
 Wendt, Edwin F.  
 Wheeler, C. M.  
 Whipple, A. L.  
 Wiland, O. M.  
 Willard, P. F.  
 Wilkins, Harry  
 Williams, G. A.  
 Winning, Robert  
 Woodward, R. P.  
 Yohe, J. K., Jr.  
 Yorke, P. H.

Young, F. C.

## VISITORS

Ainor, J. C.  
 Alberts, J. F.  
 Anderson, C. A.  
 Anderson, Harry E.  
 Anderson, William O. H.  
 Angerman, J. C.  
 Astor, J. C.  
 Auer, C. J.  
 Bagaley, R. F.  
 Barr, Orlando  
 Bell, C. W.  
 Bell, Harry  
 Berger, John S.  
 Berkoben, Charles

Bishop, James A.  
 Boate, Harry S.  
 Bornhorst, P. J.  
 Brown, A. W.  
 Buck, E. R.  
 Burgess, W. C.  
 Caldwell, C. B.  
 Carr, A. T.  
 Carson, John  
 Carver, F. W.  
 Chellman, H. R. L.  
 Clark, S. C.  
 Colchaser, L. A.  
 Colliflower, J. E.

Cooper, J. P.  
 Cotton, C. S.  
 Counsel, A. S.  
 Courtney, H., Jr.  
 Cox, A. F.  
 Cravener, James H.  
 Cromlie, C. R.  
 Cunningham, J. B.  
 Curley, J. M.  
 Dambach, J. C.  
 Dankmyer, F. C.  
 Davis, R. E.  
 Davis, William B.  
 Deibel, H. J.  
 Devey, John  
 Dietrich, Warren W.  
 Dragan, George  
 Dupes, C. E.  
 Eperthener, A. L.  
 Erfert, E. L.  
 Ervine, William  
 Ewing, W. G.  
 Fahey, P. W.  
 Fentors, J. A.  
 FitzSimmons, John  
 Flatley, William J.  
 Ford, Robert W.  
 Freeman, J. D.  
 Freyermuth, L. C.  
 Friend, R. A.  
 Fritz, A. A.  
 Fulks, D. S.  
 Funke, M.  
 Gammieri, E. J.  
 Gannon, G. P.  
 Geisler, Joseph J.  
 Gilliland, J. O.  
 Glass, Russell W.  
 Gluckson, Edward  
 Gower, Robert  
 Gress, Leslie K.  
 Grejda, Stanley  
 Griffin, G. P.  
 Gumz, Fred A.  
 Gyekes, J. A.  
 Haas, J. W.  
 Hackett, Ray  
 Hahn, H. A.  
 Harbourn, C. W.  
 Harper, H. L.  
 Haynes, W. A., Jr.  
 Hellman, Henry  
 Helly, C. R.  
 Hemma, Charles F.

Herman, J. L.  
 Higgins, F. L.  
 Hildebrand, L. B.  
 Hill, Harold A.  
 Hilstrom, Albert  
 Hockenberry, H. D.  
 Hocking, Harry  
 Irvin, W. H.  
 Jones, John  
 Jones, Merrill  
 Karnes, C. E.  
 Keeney, John H.  
 Keyes, A. H.  
 King, J. E.  
 Kirkpatrick, Thomas E.  
 Larson, A. F.  
 Laughlin, R. B.  
 Leech, B. E.  
 Lehr, William E.  
 Leuzinger, W. M.  
 Lewis, S. B.  
 Lindner, John  
 Logue, W. D.  
 Lyons, J. C.  
 MacGregor, A. T.  
 MacMillen, C. A.  
 Malenock, W. M.  
 Mamgyek, A. G.  
 Mashl, S.  
 Mateer, William M.  
 May, W. R.  
 Merz, George A.  
 Miller, L. P.  
 Miller, W. S.  
 Mills, Prentice  
 Molitaris, A. J.  
 Moore, F.  
 Moore, M. K.  
 Morford, R. T.  
 Morris, W. E.  
 Morrison, Glenn W.  
 Morrow, G. K.  
 Murray, W. J.  
 McAlpine, J. H.  
 McGall, William J.  
 McKenna, J. B.  
 McKenna, J. T.  
 McKenney, J. F.  
 McLaughlin, J. C.  
 McLaughlin, L. S.  
 McQuillen, J. L.  
 McVicker, J. W.  
 McVicker, W. D.  
 Nagel, James, Jr.

Nelson, J. Herbert  
 Newell, G. K.  
 Noble, R. F.  
 O'Hagan, J. E.  
 Oldham, Ronald W.  
 Orr, James A.  
 Overholt, Edward  
 Pape, A.  
 Pence, John  
 Penn, William  
 Petty, E. C.  
 Poling, R. L.  
 Peirce, J. E.  
 Pyle, W. C.  
 Ranck, James F.  
 Reagan, P. H.  
 Reed, John W.  
 Reel, R. P.  
 Reeve, George  
 Rehrer, Roland  
 Roach, L. L.  
 Robinson, H. L.  
 Rodgers, Joseph W.  
 Sayre, Earl  
 Schaefer, E. F.  
 Schaffer, George F.  
 Scherz, Arnold  
 Schertzinger, L. G.  
 Schlay, P. F.  
 Schuch, H. C.  
 Scott, Robert R.  
 Searight, J. C.  
 Seibert, W. C.  
 Seroky, Edward A.  
 Shafer, Russell T.  
 Shaffer, M.  
 Shannon, David E.  
 Shultz, George J.

Skeldon, J. Russell  
 Smith, F. E.  
 Snyder, H. C.  
 Somerville, J. R.  
 Stauffer, A. H.  
 Stewart, E. P.  
 Stewart, J. R.  
 Stokes, James R.  
 Strickler, W. E.  
 Strong, George A.  
 Thomas, M. F.  
 Thomas, W. H.  
 Thompson, W. E.  
 Thomson, C. F.  
 Tovey, L. A.  
 Tranter, Thomas  
 Trautman, H. J.  
 Urban, C. E.  
 Vanauker, George  
 Vandivort, R. E.  
 Vogel, E. E.  
 Vowinkel, Fred J.  
 Walter, W. W.  
 Walther, G. W.  
 Walton, H. R.  
 Ward, T., Jr.  
 Warrensford, Fred S.  
 Weaver, Joseph M.  
 Weaver, J. R.  
 Wetzel, L. W.  
 Whitehouse, W. B.  
 Wiesmann, Henry  
 Williams, C. H.  
 Williams, J. A.  
 Winkler, A. H.  
 Winters, W. J.  
 Witmer, John J.  
 Wolfe, James F.

Zoog, J. H.

**PRESIDENT:** We will dispense with the reading of the minutes of the previous meeting, as well as the call of the roll. Mr. Secretary, have you any applications for new members.

**SECRETARY:** Mr. President and gentlemen, we have the following proposals for membership:

Buck, E. R., Master Mechanic, Pennsylvania Railroad, 118 West Hutchinson Avenue, Edgewood, Pittsburgh, Pa. Recommended by G. M. Sixsmith.  
 Christian, George B., Representative, The Wine Railway Appliance Company, Box 8, Station E, Toledo, Ohio. Recommended by J. D. Conway.  
 Dunlap, Glenn, Special Representative, Carnegie-Illinois Steel Corporation, 214 Arkansas Avenue, Whitaker, Pa. Recommended by H. R. McMullen.  
 Haynes, William A., Jr., Telegraph & Signal Apprentice, Pennsylvania Railroad, Room 1122, Pennsylvania Station, Pittsburgh, Pa. Recommended by Tom R. Day.  
 Hoopes, E. L., Assistant to Chief Engineer Maintenance of Way, Pennsylvania Railroad, Pennsylvania Station, Pittsburgh, Pa. Recommended by C. M. Wheeler.



Hults, Leonard G., Traffic Manager, United Engineering & Foundry Company, 2404 First National Bank Building, Pittsburgh, Pa. Recommended by C. R. Megee.  
 Primm, W. P., Assistant Road Foreman of Engines, Pennsylvania Railroad, 1815 Crafton Boulevard, Pittsburgh, Pa. Recommended by J. B. Diven.  
 Redden, James A., Road Foreman of Engines, Pennsylvania Railroad, 30 Coulter Street, Crafton, Pittsburgh, Pa. Recommended by G. M. Sixsmith.  
 Willard F. F., General Engineer, Union Switch & Signal Company, Swissvale, Pa. Recommended by C. W. Dunham.  
 Williams, G. A., Division Engineer, Pennsylvania Railroad, Pennsylvania Station, Pittsburgh, Pa. Recommended by G. M. Sixsmith.

**PRESIDENT:** As soon as the Membership Committee has passed on the applications those gentlemen will become members of The Railway Club and we take this opportunity to welcome them. We hope they will enjoy themselves at our meetings. Are there any further communications?

**SECRETARY:** It is our duty to report tonight the deaths of the following members:

- A. M. Frauenheim, Vice President, Auto-Tite Joints Company, Pittsburgh, Pa., died October 1, 1939.  
 Frank H. Freshwater, Sales Engineer, Pressed Steel Car Company, Inc., Pittsburgh, Pa., died October 2, 1939.  
 James W. Harper, Medical Examiner, Pennsylvania Railroad, Pittsburgh, Pa., died July 19, 1939.  
 W. H. Schonover, Assistant Superintendent, Freight Transportation, Pennsylvania Railroad, Pittsburgh, Pa., died August 22, 1939.  
 F. M. Turner, General Superintendent, Allegheny & South Side Railroad, Pittsburgh, Pa., died October 15, 1939.

**PRESIDENT:** The Secretary will have the proper memorials inserted in the minutes of the meeting.

This is the annual meeting and, of course, the various annual reports will be read. We will first hear the Treasurer's Report, which the Secretary will read.

**SECRETARY:** I will now present the Treasurer's Report:

### **TREASURER'S REPORT**

Pittsburgh, Pa., October 26, 1939.

To the Officers and Members of

The Railway Club of Pittsburgh.

Gentlemen:

I herewith submit my report for the year ended October 26, 1939:

#### **ON HAND AND RECEIPTS**

|                                                                                                  |            |
|--------------------------------------------------------------------------------------------------|------------|
| Cash on hand October 27, 1938.....                                                               | \$1,879.75 |
| Moneys received from J. D. Conway, Secretary, from<br>October 28, 1938, to October 26, 1939..... | 5,221.20   |
| Interest on Bonds .....                                                                          | 57.50      |

Total Cash Receipts ..... **\$7,158.45**

## DISBURSEMENTS

|                                                       |          |
|-------------------------------------------------------|----------|
| Paid out account Vouchers No. 1 to 36, inclusive..... | 5,222.93 |
| Cash on Hand .....                                    | 1,935.52 |

## RESOURCES

|                                                                                         |            |
|-----------------------------------------------------------------------------------------|------------|
| Two U. S. Treasury Bonds \$1,000.00 each, bearing<br>interest at $2\frac{7}{8}\%$ ..... | \$2,000.00 |
| Cash Balance .....                                                                      | 1,935.52   |
| Total Resources .....                                                                   | \$3,935.52 |
| E. J. SEARLES, Treasurer.                                                               |            |

Approved:

EXECUTIVE COMMITTEE,  
FRANK J. LANAHAH, Chairman.

PRESIDENT: You have heard the Treasurer's Annual Report. I would like to have a motion on that.

HENRY GILG: I move that the Treasurer's Report be accepted and approved as read.

MR. SIXSMITH: Motion seconded.

PRESIDENT: You have heard the report read and the motion that it be accepted and approved as read seconded. All in favor say aye.

(Chorus of ayes.)..

Contrary no. (No response.)..

Motion carried.

PRESIDENT: We will now hear the Secretary's report.

## SECRETARY'S REPORT

Pittsburgh, Pa., October 26, 1939.

To the Officers and Members of  
The Railway Club of Pittsburgh.

Gentlemen:

The following is a summary of membership and financial statement for the fiscal year ended October 26, 1939:

|                                               |       |
|-----------------------------------------------|-------|
| Membership reported last year.....            | 1,210 |
| Reinstated .....                              | 2     |
| Received into membership during the year..... | 90    |
|                                               | 1,302 |
| Suspended .....                               | 108   |
| Resigned .....                                | 65    |

|                                  |    |
|----------------------------------|----|
| Loss of Address .....            | 7  |
| Deaths reported during year..... | 18 |

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|                                                                                                       |       |
|-------------------------------------------------------------------------------------------------------|-------|
| Present membership .....                                                                              | 1,104 |
| Of the above membership three are honorary. They are: D. C. Buell, Samuel O. Dunn and John A. Penton. |       |

### DECEASED MEMBERS

| Name                   | Died              |
|------------------------|-------------------|
| James S. Barrie.....   | May 6, 1939       |
| J. A. Beattie .....    | April 6, 1939     |
| E. A. Blomgren .....   | August 14, 1938   |
| John M. Connors .....  | April 18, 1938    |
| J. S. Ekey .....       | June 3, 1939      |
| R. M. Flocker .....    | June 2, 1939      |
| A. M. Frauenheim ..... | October 1, 1939   |
| F. H. Freshwater ..... | October 2, 1939   |
| C. M. Hackett .....    | November 2, 1938  |
| James W. Harper .....  | July 19, 1939     |
| William J. Knox .....  | May 26, 1938      |
| H. J. Mulligan .....   | March 27, 1939    |
| W. H. Schonover .....  | August 22, 1939   |
| A. B. Severn .....     | June 19, 1939     |
| James B. Tate .....    | July 20, 1939     |
| H. G. Taylor .....     | December 26, 1938 |
| G. W. Wildin .....     | February 28, 1939 |
| J. Young, Jr. ....     | April 19, 1939    |

### RECEIPTS

|                                                  |            |
|--------------------------------------------------|------------|
| In hands of Treasurer, close of last year.....   | \$3,879.75 |
| From advertisements .....                        | 1,156.49   |
| Dues .....                                       | 3,066.00   |
| From sale of Proceedings.....                    | 22.96      |
| Smoker Tickets and Dinner, October 27, 1938..... | 655.50     |
| Interest on Bonds .....                          | 57.50      |
| Various items .....                              | 256.50     |
| Advance Sale Smoker Tickets, October, 1939.....  | 63.75      |

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\$9,158.45

### DISBURSEMENTS

|                                                  |            |
|--------------------------------------------------|------------|
| Printing Proceedings, notices, mailing, etc..... | \$2,139.68 |
| Luncheons, cigars, postage, etc.....             | 904.50     |
| Reporting meetings .....                         | 180.00     |

|                                                             |  |                  |
|-------------------------------------------------------------|--|------------------|
| Dinner, Entertainment, Smoker, Etc., October 27, 1938 ..... |  | 616.00           |
| Salaries .....                                              |  | 1,000.00         |
| Moving pictures .....                                       |  | 42.00            |
| Messenger service, affidavits, etc.....                     |  | 20.50            |
| Premium on Bonds—Treasurer and Secretary.....               |  | 8.00             |
| Flowers .....                                               |  | 10.00            |
| Various items .....                                         |  | 256.50           |
| Special entertainment at various meetings.....              |  | 36.00            |
| Incidentals .....                                           |  | 9.75             |
|                                                             |  | <hr/>            |
|                                                             |  | 5,222.93         |
| Net Balance at close of year.....                           |  | <hr/> \$3,935.52 |

NOTE: Balance is made up of \$1,935.52 cash and two U.S.

Treasury Bonds \$1,000.00 each—2 $\frac{7}{8}$ % interest.

J. D. CONWAY, Secretary.

Approved:

EXECUTIVE COMMITTEE,

FRANK J. LANAHAH, Chairman.

PRESIDENT: I wish everyone would rise for ten seconds to pay respect to our departed members.

(All arose and remained standing for ten seconds)

PRESIDENT: You have heard the report of the Secretary, what is your pleasure?

MR. SIXSMITH: I move the report be approved and accepted as read.

HENRY GILG: I second the motion.

PRESIDENT: Motion has been made and seconded that the report of the Secretary be approved and accepted as read. All in favor signify by saying "Aye," contrary "No."

(Motion Carried)

We have audited the accounts of the Secretary and Treasurer, and find them correct as reported.

FINANCE COMMITTEE,

M. A. SMITH, Chairman,

JAMES NAGEL,

J. B. DIVEN,

GEORGE W. FOX.

PRESIDENT: We will now hear the report of the Election of Officers which the Secretary will read.

SECRETARY:—The report of Tellers of Election shows there were



236 ballots cast. The vote in each case unanimous for the candidates listed on the ballots, as follows:

PRESIDENT—Karl Berg, Superintendent Motive Power, P. & L. E. R. R. Co., McKees Rocks, Pa.

FIRST VICE PRESIDENT—J. W. Johnson, Superintendent, Railway Express Agency, Inc., Pittsburgh, Pa.

SECOND VICE PRESIDENT—Charles J. Graham, President, P. & W. Va. Ry. Co., Pittsburgh, Pa.

SECRETARY—J. D. Conway, Secretary-Treasurer, The Railway Supply Manufacturers' Association, Pittsburgh, Pa.

TREASURER—E. J. Searles, Manager, Schaefer Equipment Company, Pittsburgh, Pa.

#### EXECUTIVE COMMITTEE

Frank J. Lanahan (Chairman), President, Fort Pitt Malleable Iron Company, Pittsburgh, Pa.

A. Stucki, President, A. Stucki Company, Pittsburgh, Pa.

W. S. McAbee, Vice President and General Manager, Union Railroad Company, East Pittsburgh, Pa.

E. W. Smith, Vice President, The Pennsylvania Railroad, Pittsburgh, Pa.

Louis E. Endsley, Consulting Engineer, Pittsburgh, Pa.

F. I. Snyder, Vice President and General Manager, B. & L. E. R. R. Co., Pittsburgh, Pa.

C. O. Dambach, Superintendent, P. & W. Va. Ry. Co., Pittsburgh, Pa.

R. H. Flinn, The Pennsylvania Railroad, Pittsburgh, Pa.

R. P. Forsberg, Chief Engineer, P. & L. E. R. R., Pittsburgh, Pa.

E. A. Rauschart, Pittsburgh, Pa.

G. M. Sixsmith, Superintendent, The Pennsylvania Railroad, Pittsburgh, Pa.

J. D. Beltz, General Superintendent, B. & O. R. R. Co., Pittsburgh, Pa.

#### SUBJECT COMMITTEE\*

John B. Wright (Chairman), Assistant Vice President, Westinghouse Air Brake Company, Wilmerding, Pa.

H. H. Haupt, General Superintendent Motive Power, Pennsylvania Railroad, Pittsburgh, Pa.

M. A. Smith, General Manager, P. & L. E. R. R. Co., Pittsburgh, Pa.

W. C. Van Blarcom, Vice President, Aliquippa & Southern Railroad, Aliquippa, Pa.

#### RECEPTION AND ATTENDANCE COMMITTEE\*

T. F. Sheridan (Chairman), Chief Clerk to Superintendent Motive Power, P. & L. E. R. R. Co., McKees Rocks, Pa.

George B. Farlow, Division Engineer, B. & O. R. R. Co., Pittsburgh, Pa.

- C. W. Trust, Traffic Manager, U. S. Steel Corporation Subsidiaries, Pittsburgh, Pa.
- C. M. Wheeler, Asst. District Manager, Union Switch & Signal Co., Swissvale, Pa.
- J. Porter Gillespie, Vice President in Charge of Railroad Sales, Lockhart Iron & Steel Co., Pittsburgh, Pa.
- W. F. Ambrose, Master Mechanic & Master Car Builder, Aliquippa & Southern Railroad, Aliquippa, Pa.
- W. P. Buffington, Traffic Manager, Pittsburgh Coal Co., Pittsburgh, Pa.
- William C. Hansen, Asst. Manager, A. Stucki Company, Pittsburgh, Pa.
- C. H. Reymer, Special Railroad Representative, Oliver Iron & Steel Corporation, Pittsburgh, Pa.
- C. J. Code, Asst. to Chief Engineer Maintenance of Way, Pennsylvania Railroad, Pittsburgh, Pa.
- Harry Courtney, Shop Superintendent, P. & L. E. R. R. Co., McKees Rocks, Pa.
- A. B. Cressler, Purchasing Agent, P. & W. Va. Ry. Co., Pittsburgh, Pa.
- William F. Lowry, Jr., Sales Agent, American Car & Foundry Co., Pittsburgh, Pa.
- Lloyd Sutherland, General Storekeeper, P. & L. E. R. R. Co., McKees Rocks, Pa.

#### ENTERTAINMENT COMMITTEE

- Vincent Kroen (Chairman), Supervisor Express Service, Pennsylvania Railroad, Pittsburgh, Pa.
- J. S. Lanahan (Vice Chairman), Vice President, Fort Pitt Malleable Iron Co., Pittsburgh, Pa.
- C. P. Schrecongost, Traffic Manager, Hillman Coal & Coke Co., Pittsburgh, Pa.
- W. B. Moir, Chief Car Inspector, Pennsylvania Railroad, Pittsburgh, Pa.
- W. C. Burel, Superintendent, Western Allegheny Railroad, Kaylor, Pa.
- H. E. Chilcoat, General Manager of Sales, Koppel Division, Pressed Steel Car Co., Inc., Pittsburgh, Pa.
- F. L. Foster, Superintendent Freight Transportation, P. & L. E. R. R. Co., Pittsburgh, Pa.

#### FINANCE COMMITTEE\*

- James Nagel (Chairman), Asst. General Superintendent, Montour Railroad Company, Coraopolis, Pa.
- R. S. Bull, Superintendent Power & Inclines, Pittsburgh Railways Company, Pittsburgh, Pa.
- George W. Fox, Secretary, Davis Brake Beam Company, Johnstown, Pa.
- Thomas E. Britt, Sales Representative, Ball Chemical Company, Pittsburgh, Pa.
- T. W. Carr, Superintendent Rolling Stock, P. & L. E. R. R. Co., McKees Rocks, Pa.

## ADVERTISING COMMITTEE

- J. H. James (Chairman), Purchasing Agent, P. & L. E. R. R. Co., Pittsburgh, Pa.  
T. R. Dickinson, Purchasing Agent, B. & L. E. R. R. Co., Pittsburgh, Pa.  
Harry C. Graham, Vice President, Pittsburgh Screw & Bolt Corporation, Pittsburgh, Pa.  
T. R. Fitzpatrick, Freight Traffic Manager, P. & L. E. R. R. Co., Pittsburgh, Pa.  
W. F. Wilson, Manager Pittsburgh Works, American Steel Foundries, Verona, Pa.  
Joseph A. Crenner, District Manager, Dearborn Chemical Company, Pittsburgh, Pa.  
John C. Shingledecker, Supervisor of Service Stations, The Pennzoil Company, Pittsburgh, Pa.

## MEMBERSHIP COMMITTEE\*

- Caleb R. Megee (Chairman), District Manager, Car Service Division, Association of American Railroads, Pittsburgh, Pa.  
J. L. O'Toole, Asst. to General Manager, P. & L. E. R. R. Co., Pittsburgh, Pa.  
J. H. Ainsworth, Railroad Sales Department, Carnegie-Illinois Steel Corporation, Pittsburgh, Pa.  
J. M. Fair, Engineer Maintenance of Way, Pennsylvania Railroad, Pittsburgh, Pa.  
S. S. Bruce, General Traffic Manager, Koppers Company, Pittsburgh, Pa.  
G. W. Honsberger, Transportation Manager, Westinghouse Electric & Manufacturing Co., Pittsburgh, Pa.  
C. C. Pitcher, Asst., Superintendent, B. & O. R. R. Co., Pittsburgh, Pa.  
T. Fitzgerald, General Manager, Pittsburgh Railways Company, Pittsburgh, Pa.  
G. C. Harper, General Superintendent, Montour Railroad Company, Coraopolis, Pa.  
Frank A. Jarres, Asst. Storekeeper, B. & O. R. R. Co., Pittsburgh, Pa.  
C. S. Leet, Asst. General Manager, B. & L. E. R. R. Co., Pittsburgh, Pa.  
R. C. McIntyre, Superintendent Motive Power Union Railroad Co., East Pittsburgh, Pa.  
H. C. Pringle, Vice President and Superintendent, Monongahela Connecting Railroad Co., Pittsburgh, Pa.  
John W. Davis, General Manager, Penn Iron & Steel Co., Creighton, Pa.  
C. G. Ingraham, General Purchasing Agent, Pressed Steel Car Company, Inc., McKees Rocks, Pa.  
F. R. Paisley, Engineer Maintenance of Way, P. & L. E. R. R. Co., Pittsburgh, Pa.  
E. S. Rupp, Division Accountant, B. & O. R. R. Co., Pittsburgh, Pa.

\*In addition to the newly-elected members, the complete committees are shown above, including those previously elected whose terms of office have not expired.



PRESIDENT: I have very little to say now except that I want to thank the committees that served last year. I think they did a very good job. Due to the fact that I received a promotion just when I took over the Presidency of this club, unfortunately I could not spend the amount of time that I felt I should spend on the activities of this club to make it as successful as possible. That was a handicap I could not overcome but the committees were very good and willing to serve. Again, I thank you gentlemen.

Looking back, I remember when I first walked into one of your meetings back around 1903 or 1904. At that time I was a railroad engineer on the B. & O. Railroad and a brother engineer asked me if I would go down to the Railway Club with him and hear a good talk. I came in and listened to someone that night. I do not remember now whom it was, but I remember that it was a good talk. I had no idea that night when I walked into that meeting that I would ever be President of this club. I feel that it was an honor to be your President, whether good or bad, and I appreciate the honor that was bestowed upon me. We cannot all be good. I could not get up before you and assume a dignified pose like my good friend Mr. Sixsmith. (Laughter) Nevertheless, I gave you the best I had and I have enjoyed serving you.

Now it is my supreme pleasure to turn this meeting over to the new President, Mr. Karl Berg, because I will now drop into the class of has-beens. Mr. Berg.

MR. KARL BERG: Fellow club members: In accepting the presidency of The Railway Club of Pittsburgh I thank you from the bottom of my heart for the confidence and the honor which you have now bestowed upon me. At this moment my conscience—perhaps I should say my better judgment—tells me that I am swimming in water which is too deep for me. However that may be, it will be my aim henceforth to prove to you if I can that you have not made a mistake in your selection.

Regardless of conditions, the business of the Railway Club must carry on. We have a busy year ahead of us, of that I am sure, and we must have entertaining and instructive meetings; we must have regular attendance and; above all, we must have members. We must build up our membership. I feel I can speak for all of those that you have selected when I say they will undoubtedly do their part. Furthermore, anything they cannot do I am sure the general membership will make up for. I trust we will work in perfect harmony to success. I thank you. (Applause).

At this time, I believe it is customary to call upon some of the other officers that you have selected and present them to you so you, at least, can get a good look at them. I shall now call upon the First



Vice President, Mr. Johnson, and ask that he come up here and say something to you. (Applause).

MR. J. W. JOHNSON: Mr. President and members of The Railway Club: I accept the responsibility of this new office with some timidity, but assure you I shall devote as much enthusiasm and energy as possible in the coming year to make this club a success under its present leadership. I thank you for your confidence. (Applause).

PRESIDENT BERG: Is Mr. C. G. Graham, the Second Vice President, in the room. (No response). He is not here just at the moment. We do want to hear from Mr. Conway. (Applause).

SECRETARY CONWAY: I have no prepared speech and do not know just what to say, but I certainly do appreciate this continued honor that you have bestowed on me for some thirty-nine years and as long as I can get down here and stand on two legs, while it is your pleasure to continue me in the office, I will still be there. (Applause).

PRESIDENT BERG: Mr. E. J. Searles succeeded in being re-elected. We will ask him to stand. (Not present).

Mr. John B. Wright, Chairman of the Subject Committee, will you please rise? (Not present).

Mr. Thomas F. Sheridan, of the Reception and Attendance Committee, let us see what he looks like!

SECRETARY: He is engaged outside.

PRESIDENT BERG: We would like to see Mr. J. H. James, of the Advertising Committee, and Mr. James Nagle, of the Finance Committee.

(Mr. Nagle stands). (Applause).

PRESIDENT BERG: I will now call on the Chairman of the Executive Committee, Mr. Lanahan:

FRANK J. LANAHAHAN: Mr. President and fellow club members: If I could rise and only make a bow like all the others called upon previously, I would be particularly happy, as no doubt the ovation that was accorded them was by reason of the absence of any effort at speech making. Conscious am I, however, of a duty having been assigned to me, and in fulfilling this obligation I will have to impose upon you for a few moments.

As brevity and terseness epitomize the characteristics of our President, the program this evening should come within the same category. Your retiring president, Mr. J. D. Beltz, became a member of the Railway Club of Pittsburgh, on September 27, 1934. Was elected Second Vice President, October 22, 1936, elected First Vice President on October 28, 1937,

President on October 27, 1938, and tonight becomes a member of the Executive Committee.

It is a long established custom in our organization, upon retirement, to recognize the services of our chief executive officer, and so tonight, we tender tribute to Mr. Beltz. The tangible form that this assumes, is a chest of silver, and the committee appointed for the selection of this honorarium hopes the recipient, and the membership of the club, will approve of their action. Especially is this applicable to those who so generously responded for the purpose, and who have been thanked individually for their courtesy and contribution. So, on behalf of these members, it is a distinction accorded me to present to our retiring president, this beautiful chest of silver, the pattern of which is designated as "Prelude," and described as "a bridal bouquet of silver loveliness that marks the beginning of a lifetime of happy entertaining." May this romantic designation be the experience of the Beltz family.

MR. J. D. BELTZ: All I can say to you on behalf of Mrs. Beltz and myself is that this beautiful gift is indeed appreciated. Of course, Mrs. Beltz did not do anything for the Club except to allow her husband to be out on those meeting nights, but I would have been out anyhow, no doubt, if I had occasion to be out. However, she has had to put up with the burden of waiting on her husband, so this is a very suitable gift for a retiring president. It is something which is not only beautiful but useful and can be kept in the home for years to come. When I get a chance to look at this or use it—which, of course, will not be done unless we have company—I will always remember the Railway Club. My connection with the Railway Club during the past year has been very pleasant as I stated before. I stood up here and performed my duties as best I could, and although I was not allowed to swear and could not feel quite natural, it has been a very enjoyable year and one which I am sorry has come to an end. However, I am reconciled in retiring from the presidency of this Club because there are certain responsibilities in that office which keep a fellow worried. Please accept my heartfelt thanks for your very kind remembrance.

PRESIDENT BERG: If there is anyone that wishes to say something at this time we will be glad to give you the opportunity of doing so.

(No response).

I can see that you are all looking forward to the entertainment and it is due you. Therefore, I will now turn the meeting over to Mr. Vincent Kroen, Chairman of the Entertainment Committee, who will proceed with the entertainment.

The following is a program of the entertainment presented:

|                                     |                          |
|-------------------------------------|--------------------------|
| Miss Dolly Dean.....                | Dancer                   |
| Leroy.....                          | Black Face Comedian      |
| Dot and Pat.....                    | Song and Comedy          |
| Daisy The Horse.....                | Comedy Stunt             |
| Miss Lucile Bauch.....              | Light Opera Star—Soprano |
| Master of Ceremonies: "Billy" Hinds |                          |
| Accompanist: Aneurin Bodycombe      |                          |

The entertainment was enthusiastically received by the membership. There being no further business, upon motion the meeting adjourned, when a buffet luncheon was served.

J. D. CONWAY, Secretary.

# CONSTITUTION

## ARTICLE I

The name of this organization shall be "THE RAILWAY CLUB OF PITTSBURGH."

## ARTICLE II

### OBJECTS

The objects of this Club shall be mutual intercourse for the acquirement of knowledge by reports and discussion, for the improvement of railway operation, construction, maintenance and equipment, and to bring into closer relationship men employed in railway work and kindred interests.

## ARTICLE III

### MEMBERSHIP

SECTION 1. The membership of this Club shall consist of persons interested in any department of railway service or kindred interests, or persons recommended by the Executive Committee upon the payment of the annual dues for the current year.

SEC. 2. Persons recommended by the Executive Committee and by unanimous vote of all members present at any regular meeting of the Club may be made an Honorary Member and shall be entitled to all the privileges of membership and not be subject to the payment of dues or assessments.

## ARTICLE IV

### OFFICERS

The officers of this Club shall consist of a President, First Vice President, Second Vice President, Secretary, Treasurer and an Executive Committee of seven or more members, elected at the Annual Meeting of the Club, for a term of one year. There shall be a Finance Committee of five or more members; a Membership Committee of twelve or more members; an Entertainment Committee of seven or more members; a Reception and Attendance Committee of twelve or more members; a Subject Committee of three or more members; and an Advertising Committee of three or more members; all elected at the Annual Meeting, the term of office to be specified, but in no case to exceed three years. Chairmen and Vice Chairmen of these committees where not named on the ballot will be elected from among the elected members by the Executive Committee.



## ARTICLE V

### DUTIES OF OFFICERS

SECTION 1. The President shall preside at all regular or special meetings of the Club and perform all duties pertaining to a presiding officer; also serve as a member of the Executive Committee.

SEC. 2. The First Vice President, in the absence of the President, will perform all the duties of that officer; the Second Vice President, in the absence of the President and First Vice President, will perform the duties of the presiding officer. The First and Second Vice Presidents shall also serve as members of the Executive Committee.

SEC. 3. The Executive Committee will exercise a general supervision over the affairs of the Club and authorize all expenditures of its funds.

SEC. 4. The Secretary will attend all meetings of the Club or Executive Committee, keep full minutes of their proceedings; preserve the records and documents of the Club, accept and turn over all moneys received to the Treasurer at least once a month, draw cheques for all bills, when approved by a majority of the Executive Committee present at any meeting of the Club or Executive Committee meeting. He shall have charge of the publication of the Club Proceedings and perform other routine work pertaining to the business affairs of the Club under direction of the Executive Committee.

SEC. 5. The Treasurer shall receipt for all moneys received from the Secretary, and deposit the same in the name of the Club within thirty days in a bank approved by the Executive Committee. All disbursements of the funds of the Club shall be by check signed by the Secretary and Treasurer.

SEC. 6. The Subject Committee will arrange programs and select speakers for the regular meetings of the Club and perform such other duties as may be assigned them by the President or First and Second Vice Presidents, working in conjunction with the Entertainment Committee as may be required. The Chairman of the Subject Committee will serve as an advisory member of the Executive Committee.

SEC. 7. The Membership Committee will actively engage in building up and maintaining the list of active members of the Club and perform such other duties as may be assigned them by the President or First and Second Vice Presidents. The Chairman of this Committee will serve as an advisory member of the Executive Committee.

SEC. 8. The Advertising Committee will solicit advertisements for the Official Proceedings and perform such other duties as may be assigned them by the President or First and Second Vice Presidents. The Chairman of this Committee will serve as an advisory member of the Executive Committee.

SEC. 9. The Reception and Attendance Committee will receive mem-

bers, guests and visitors at the meetings and generally assist in promoting social intercourse and good fellowship, securing attendance of the members, and performing such other duties as may be assigned them by the President or First and Second Vice Presidents. The Chairman of this Committee will serve as an advisory member of the Executive Committee.

SEC. 10. The Entertainment Committee will perform such duties as may be assigned them by the President or First and Second Vice Presidents, and such other duties as may be proper for such a committee.

SEC. 11. The Finance Committee will perform the duties of an auditing committee to audit the accounts of the Club at the close of a term or at any time necessary to do so and perform such other duties as may be assigned them by the President or First and Second Vice Presidents.

## ARTICLE VI

### ELECTION OF OFFICERS

SECTION 1. The officers shall be elected at the regular annual meeting as follows, except as otherwise provided for.

SEC. 2. The President will appoint a Nominating Committee of five members, three of whom must be regularly elected members of the Executive Committee, who shall at the September meeting recommend nominations for all offices to be filled at the annual meeting and these, together with any other nominations which may be made from the floor under proper procedure, will be printed and mailed as a letter-ballot to all of the members of the Club, not less than twenty days previous to the Annual Meeting, by the elective members of the Executive Committee. Each member may express his choice for the several offices to be filled by properly marking the letter-ballot and returning it to the Chairman of the Executive Committee.

SEC. 3. The elective members of the Executive Committee will present to the President the names of the members receiving the highest number of votes for each office, together with the number of votes received.

SEC. 4. The President will announce the result of the ballot and declare the election.

SEC. 5. Should two or more members receive the same number of votes, it shall be decided by a vote of the members present, by ballot.

## ARTICLE VII

### AMENDMENTS

Amendments may be made to this Constitution by written request of ten members, presented at a regular meeting and decided by a two-thirds vote of the members present at the next regular meeting.

# BY - LAWS

## ARTICLE I

### MEETINGS

SECTION 1. The regular meetings of the Club shall be held at Pittsburgh, Pa., on the fourth Thursday of each month, except June, July and August, at 8 o'clock P. M.

SEC. 2. The annual meeting shall be held on the fourth Thursday of October each year.

SEC. 3. The President may, at such times as he deems expedient, or upon request of a quorum, call special meetings.

## ARTICLE II

### QUORUM

At any regular or special meeting twenty-five members shall constitute a quorum.

## ARTICLE III

### DUES

SECTION 1. The annual dues of members shall be Two Dollars, payable in advance on or before the fourth Thursday of September of each year.

SEC. 2. The annual subscription to the printed Proceedings of the Club shall be at the published price of One Dollar. Each member of the Club shall pay for both dues and subscription. Dues and subscription paid by members proposed at the meetings in September or October shall be credited for the following fiscal year.

SEC. 3. At the annual meeting members whose dues and subscription are unpaid shall be dropped from the roll after due notice mailed them at least thirty days previous.

SEC. 4. Members suspended for non-payment of dues shall not be reinstated until all arrearages have been paid.

## ARTICLE IV

### ORDER OF BUSINESS

1. Roll call.
2. Reading of the minutes of preceding meeting.
3. Reception of new members.
4. Announcements and communications.
5. Appointment of committees.
6. Reports of officers or committees.
7. Unfinished business.
8. New business.
9. Election of officers.
10. Presentation of program and discussion.
11. Adjournment.

## ARTICLE V

### PUBLICATIONS

SECTION 1. The Proceedings or such portion as the Executive Committee may approve shall be published (standard size, 6x9 inches) and mailed to the members of the Club or other similar clubs with which exchange is made.

## ARTICLE VI

The stenographic report of the meetings will be confined to resolutions, motions and discussions of papers unless otherwise directed by the presiding officer.

## ARTICLE VII

### AMENDMENTS

These By-Laws may be amended by written request of ten members, presented at a regular meeting, and a two-thirds vote of the members present at the next meeting.



# **In Memoriam**

**A. M. FRAUENHEIM**

**Joined Club October 27, 1927**

**Died October 1, 1939**

**FRANK H. FRESHWATER**

**Joined Club January 27, 1911**

**Died October 2, 1939**

**JAMES W. HARPER**

**Joined Club September 25, 1930**

**Died July 19, 1939**

**W. H. SCHONOVER**

**Joined Club December 17, 1936**

**Died August 22, 1939**

**F. M. TURNER**

**Joined Club September 22, 1905**

**Died October 15, 1939**

# MEMBERS

- Ackley, James O.,  
Warehouse Manager,  
A. M. Iams Company,  
325 Oneida Street,  
Pittsburgh, Pa.
- Adair, V. B.,  
Tester,  
Westinghouse Air Brake Co.,  
Box 193,  
Wilmerding, Pa.
- Adams, Frank W.,  
Local Storekeeper,  
B. & O. R. R.,  
137 Minooka St.,  
Mt. Oliver Station,  
Pittsburgh, Pa.
- Adams, Walter A.,  
Chief Clerk,  
P. & L. E. R. R.,  
230 Ohio Ave.,  
Glassport, Pa.
- Aiken, Glen A.,  
President,  
American Nut & Bolt  
Fastener Co.,  
2029 Doerr Street,  
N. S., Pittsburgh, Pa.
- Ainsworth, J. H.,  
Railroad Sales Department,  
Carnegie-Illinois Steel Corp.,  
Carnegie Bldg.,  
Pittsburgh, Pa.
- Aivalotis, John,  
Assistant Foreman,  
B. & O. R. R. Co.,  
P. O. Box 44,  
Midway, Pa.
- Allderdice, Norman,  
Sales Representative,  
Frank M. Knox Co.,  
P. O. Box 46,  
Sewickley, Pa.
- Allen, Earl M.,  
Engineer (Signal),  
Union Switch & Signal Co.,  
1318 Lancaster Ave.,  
Pittsburgh (18), Pa.
- Allison, John,  
Engineer,  
Pgh. Steel Foundry Corp.,  
Glassport, Pa.
- Ambrose, W. F.,  
M. M. & M. C. B., Aliquippa  
& So. R. R.,  
1301 Meadow St.  
Aliquippa, Pa.
- Amend, J. H.,  
Assistant Yard Master,  
Pennsylvania Railroad,  
529 South Braddock Ave.,  
Pittsburgh, Pa.
- Ames, Louis,  
Supervisor A. E. D. Dept.,  
Air Reduction Sales Co.,  
1116 Ridge Ave.,  
N. S., Pittsburgh, Pa.
- Anderegg, G. W.,  
Electrician,  
P. & L. E. R. R. Co.,  
814 Freeland St.,  
Pittsburgh, Pa.
- Anderson, Burt T.,  
General Sales Manager,  
Union Switch & Signal Co.,  
Swissvale, Pa.
- Anderson, G. S.,  
Foreman,  
Pennsylvania System,  
Box 19, Penna. Station,  
Pittsburgh, Pa.
- Anderson, J. P.,  
Chief Engineer,  
Pressed Steel Car Co. Inc.,  
1207 Clairhaven St.,  
Crafton Heights,  
Pittsburgh, Pa.
- Angel, A. J.,  
113 Elmont Street,  
Pittsburgh, Pa.
- Anne, George E.,  
Representative,  
American Brake Shoe &  
Foundry Co.,  
1101 Fourteenth Ave.,  
Altoona, Pa.
- Ansman, J. M.,  
Movement Director,  
Pennsylvania Railroad,  
Pennsylvania Station,  
Pittsburgh, Pa.
- Arensberg, F. L.,  
President,  
Vesuvius Crucible Co.,  
Box 29,  
Swissvale, Pa.

- Armstrong, C. B.,  
Railway Sales Manager,  
Central Division,  
Air Reduction Sales Co.,  
332 South Michigan Ave.,  
Chicago, Ill.
- Arnold, J. J.,  
Sales Dept.,  
Pressed Steel Car Co. Inc.,  
Grant Building,  
Pittsburgh, Pa.
- Ashley, F. B.,  
Vice President,  
Pruett Schaffer Chemical Co.,  
Tabor St.,  
Corliss Station,  
Pittsburgh, Pa.
- Atkins, T. Earl,  
Branch Manager,  
The Pennzoil Company,  
Chamber of Commerce  
Building,  
Pittsburgh, Pa.
- Atkinson, T. J., Jr.,  
B. & B. Inspector,  
Pennsylvania Railroad,  
124 Washington Street,  
Freeport, Pa.
- Aulbach, A. J.,  
Yardmaster, P. & L. E. R. R.,  
318 Quincy Ave.,  
Mt. Oliver Station,  
Pittsburgh, Pa.
- Austin, David F.,  
Vice Pres. in charge of Sales,  
Carnegie-Illinois Steel Corp.,  
Carnegie Building,  
Pittsburgh, Pa.
- Babcock, F. H.,  
Safety Agent,  
P. & L. E. R. R.,  
221 Magnolia Ave.,  
Mt. Lebanon,  
Pittsburgh, Pa.
- Bacon, J. L.,  
Manager of Sales,  
Valve Pilot Corporation,  
230 Park Avenue,  
New York, N. Y.
- Badgett, Stephen H.,  
Engineering Dept.,  
Pressed Steel Car Co. Inc.,  
7302 Church Ave.,  
Ben Avon, Pittsburgh, Pa.
- Baer, Harry L.,  
Pres., Water Treatment Co.  
of America,  
1536 Madison Ave.,  
N. S., Pittsburgh, Pa.
- Bagaley, William W.,  
Purchasing Agent,  
H. K. Porter Co.,  
49th and Harrison Sts.,  
Pittsburgh, Pa.
- Bailey, J. C.,  
Asst. to General Supt.,  
B. & L. E. R. R.,  
350 Main St.,  
Greenville, Pa.
- Baily, J. H.,  
Vice President,  
Edgewater Steel Co.,  
P. O. Box 478,  
Pittsburgh, Pa.
- Bair, J. K.,  
Locomotive Engineer,  
Union Railroad,  
574 McMasters Ave.,  
Turtle Creek, Pa.
- Bakewell, Donald C.,  
Vice President,  
Blaw Knox Co.,  
Farmers Bank Bldg.,  
Pittsburgh, Pa.
- Ball, Fred M.,  
District Manager,  
Franklin Ry. Sup. Co., Inc.,  
Broad St. Station Bldg.,  
Philadelphia, Pa.
- Ball, George L.,  
Secretary and Treasurer,  
Ball Chemical Co.,  
Fulton Building,  
Pittsburgh, Pa.
- Balla, J. A.,  
Asst. Supervisor,  
Telegraph & Signals,  
Pennsylvania Railroad,  
5825 Elgin Ave.,  
E. E. Pittsburgh, Pa.
- Balph, M. Z.,  
Assistant Engineer,  
P. & L. E. R. R.,  
3308 Sixth Ave.,  
Beaver Falls, Pa.
- Balsley, J. I.,  
Asst. General Foreman,  
B. & O. R. R. Co.,  
406 Zara Street,  
Knoxville,  
Pittsburgh, Pa.

- Balzer, C. E.,  
Inspector of Tests,  
P. & L. E. R. R.,  
3432 Allendale St.,  
Pittsburgh, Pa.
- Barclay, J. R.,  
Cost Engineer,  
P. & L. E. R. R.,  
4 Oakwood Road,  
Crafton, Pittsburgh, Pa.
- Barnett, George,  
Salesman,  
W. W. Lawrence & Co.,  
West Carson St.,  
Pittsburgh, Pa.
- Barney, Harry,  
President-Treasurer,  
Barney Machinery Co., Inc.,  
Union Trust Bldg.,  
Pittsburgh, Pa.
- Barnhart, B. F.,  
Road Foreman of Engines,  
B. & L. E. R. R.,  
9 Shady Ave.,  
Greenville, Pa.
- Barr, H. C.,  
Agent, P. & L. E. R. R.,  
131 Sycamore St.,  
Pittsburgh (11), Pa.
- Barton, E. E.,  
Asst. Local Treasurer,  
P. & L. E. R. R. Co.,  
1718 Ridge Avenue,  
Coraopolis, Pa.
- Bass, Dr. L. W.,  
Assistant Director,  
Mellon Institute of  
Industrial Research,  
4400 Fifth Avenue,  
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- Batchelar, E. C.,  
Manager, The Motch &  
Merryweather Mach'y Co.,  
1315 Clark Bldg.,  
Pittsburgh, Pa.
- Bauer, F. C.,  
Assistant Agent,  
Railway Express Agency,  
2223 Lucina Ave.,  
Overbrook,  
Pittsburgh (10), Pa.
- Bauer, Lawrence M.,  
Car Repairer,  
Pennsylvania Railroad,  
7217 Kedron St.,  
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- Bauer, R. B.,  
General Yard Master,  
P. & L. E. R. R. Co.,  
Dickerson Run, Pa.
- Baughman, G. W.,  
Union Switch & Signal Co.,  
103 Biddle St.,  
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- Beall, C. R.,  
Chief Engineer,  
Union Switch & Signal Co.,  
Braddock Avenue,  
Swissvale, Pa.
- Beam, E. J.,  
Car Builder, Penna. System,  
577 Fourth St.,  
Pitcairn, Pa.
- Beam, William H.,  
Steam & Electrical Engineer,  
P. & W. Va. Ry. Co.,  
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- Beaver, R. C.,  
Asst. Mechanical Engineer,  
B. & L. E. R. R.,  
122 West Main St.,  
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- Beck, C. H.,  
General Sales Manager,  
Westinghouse Air Brake Co.,  
Wilmerding, Pa.
- Beeson, H. L.,  
General Foreman,  
Monongahela Ry. Co.,  
207 Riverview Terrace,  
West Brownsville, Pa.
- Beitsch, George F.,  
Gang Foreman,  
Pennsylvania Railroad,  
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- Bell, Charles W.,  
Supervisor of General  
Engineering,  
Union Switch & Signal Co.,  
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Forest Hills, (21),  
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- Beltz, J. D.,  
General Superintendent,  
B. & O. R. R.,  
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South Hills,  
Pittsburgh, Pa.



- Bender, H. P.,  
Mechanical Engineer,  
P. & L. E. R. R. Co.,  
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McKees Rocks, Pa.
- Berg, Karl,  
Supt. Motive Power,  
P. & L. E. R. R.,  
McKees Rocks, Pa.
- Berg, Max,  
Locomotive Engineer,  
Montour Railroad Co.,  
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- Berghane, A. L.,  
Mechanical Expert,  
Westinghouse Air Brake Co.,  
Wilmerding, Pa.
- Bergman, Carl R.,  
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Gulf Oil Corp.,  
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Test Engineer,  
Westinghouse Air Brake Co.,  
Wilmerding, Pa.
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Assistant to President,  
Pullman-Standard Car  
Manufacturing Co.,  
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Electrical Foreman,  
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Engine House Foreman,  
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Telegraph & Telephone Engr.,  
Pennsylvania Railroad,  
Pennsylvania Station,  
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- Bishop, D. B.,  
Salesman,  
Dearborn Chemical Co.,  
Farmers Bank Bldg.,  
Pittsburgh, Pa.
- Bishop, H. G.,  
Asst. Road Fore. of Engines,  
Pennsylvania Railroad,  
422 North Highland Ave.,  
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- Bisler, Walter E.,  
Sales Representative,  
Combustion Engineering  
Co., Inc.,  
First National Bank  
Building,  
Pittsblrgh, Pa.
- Bittner, George,  
Asst. Engine House Foreman,  
Pennsylvania Railroad,  
247 Ivory Ave.,  
N. S. Pittsburgh, Pa.
- Bixler, Warren,  
Secretary-Treasurer,  
Foster Bixler Fuel Co.,  
Grant Building,  
Pittsburgh, Pa.
- Black, C. M.,  
Asst. to G. T. M.,  
P. & W. Va. Ry. Co.,  
Wabash Bldg.,  
Pittsburgh, Pa.
- Black, C. R.,  
Service Representative,  
Westinghouse Electric and  
Manufacturing Co.,  
501 N. Lang Ave.,  
Pittsburgh, Pa.
- Blackmore, G. A.,  
President,  
Union Switch & Signal Co.,  
Swissvale, Pa.
- Blaine, C. H.  
Welding Supervisor,  
Pullman-Standard Car  
Mfg. Co.,  
P. O. Box 71,  
Butler, Pa.
- Blair, H. A., Supervisor,  
Federal Safety Appliances,  
B. & O. R. R. Co.,  
B. & O. Road Bldg.,  
Baltimore, Md.
- Blair, John R.,  
Asst. Mgr. of Sales,  
Pittsburgh Steel Co.,  
Grant Building,  
Pittsburgh, Pa.

Blanchard, Henry,  
Sales Representative,  
The Baldwin Locomotive  
Works,  
Paschall Station,  
Philadelphia, Pa.

Blest, Minot C.,  
Ass't. to Vice Pres't.,  
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General Mechanical Engr.,  
Union Switch & Signal Co.,  
Swissvale, Pa.

Bottomly, E. S.,  
Chief Joint Inspector,  
P. R. R., B. & O.,  
Rdg. and W. M.,  
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Martinsburg, W. Va.

Bovard, Harry D.,  
President,  
Smith Porous Drain Pipe  
Corporation,  
405 Penn Avenue,  
Pittsburgh, Pa.

Bowery, Frank J.,  
Chief Estimator, F. C. D.,  
P. S. C. Co.,  
214 Birmingham Ave.,  
Avalon, Pa.

Boyd, John R.,  
Designing Engineer,  
P. & L. E. R. R. Co.,  
P&LE Terminal Bldg.,  
Pittsburgh, Pa.

Boyd, J. W.,  
Superintendent,  
Monongahela Railway Co.,  
Brownsville, Pa.

Boyer, W. W.,  
Asst. Division Engineer,  
Pennsylvania Railroad,  
35 Dinsmore Ave.,  
Crafton, Pittsburgh, Pa.

Boyland, William E.,  
Train Master,  
B. & O. R. R. Co.,  
109 Green Street,  
Connellsville, Pa.

Bradley, J. P.,  
(Retired),  
Railway Express Agency,  
Inc.,  
550 Dawson Ave.,  
Pittsburgh (2), Pa.

Bradley, W. C.,  
C. C. to Gen'l. Supt.,  
Union R. R.,  
260 Cascade Road,  
Forest Hills, Wilkensburg, Pa.

Brant, Wm. J.,  
709 East Ohio St.,  
N. S., Pittsburgh, Pa.

Braun, Otto F.,  
Gen. Mach. Shop Foreman,  
P. & L. E. R. R.,  
R. D. 1—Herbst Road,  
Coraopolis, Pa.

Brennan, John T.,  
Assistant Vice President,  
Greenville Steel Car Co.,  
Greenville, Pa.

Brewer, H. W.,  
District Master Mechanic,  
B. & O. R. R. Co.,  
N. Jared Street,  
Du Bois, Pa.

Brice, A. E.,  
Special Representative,  
Gulf Refining Co.,  
Gulf Building,  
Pittsburgh, Pa.

Britt, T. E.,  
Sales Representative,  
Ball Chemical Company,  
2818 Clermont Ave.,  
Pittsburgh, (10), Pa.

Brown, B. R.,  
Sales Engineer,  
Southern Wheel Division,  
American Brake Shoe  
& Foundry Company,  
915 Midland Bldg.,  
Cleveland, Ohio.

Brown, C. C.,  
Rep., Dearborn Chemical Co.,  
Farmers Bank Bldg.,  
Pittsburgh, Pa.

Brown, Earl F.,  
Electrical Supervisor,  
P. & L. E. R. R. Co.,  
Terminal Station,  
Pittsburgh, Pa.

- Brown, F. M.,  
Supt., P. & L. E. R. R.,  
Pittsburgh, Pa.
- Brown, H. C.,  
Salesman,  
Independent Pneumatic  
Tool Co.,  
Wabash Building,  
Pittsburgh, Pa.
- Brown, Harold A.,  
Advertising Manager,  
Railway Equipment &  
Publication Co.,  
424 West 33rd St.,  
New York, N. Y.
- Brown, John W.,  
Assistant Foreman,  
Pullman Company,  
205 Conniston Street,  
Mt. Oliver, Pittsburgh, Pa.
- Brown, Ralph W.,  
Service Engineer,  
Flannery Bolt Company,  
Bridgeville, Pa.
- Browne, Bard,  
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STATEMENT OF THE OWNERSHIP, MANAGEMENT,  
CIRCULATION, ETC., REQUIRED BY THE ACT  
OF CONGRESS OF MARCH 3, 1933

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STATE OF PENNSYLVANIA    }  
COUNTY OF ALLEGHENY    }   SS:

Before me, a Notary Public, in and for the State and  
county aforesaid, personally appeared, J. D. Conway, Secre-  
tary, who, having been duly sworn according to law, deposes  
and says that he is the Editor of the Official Proceedings—  
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J. D. CONWAY, Secretary.

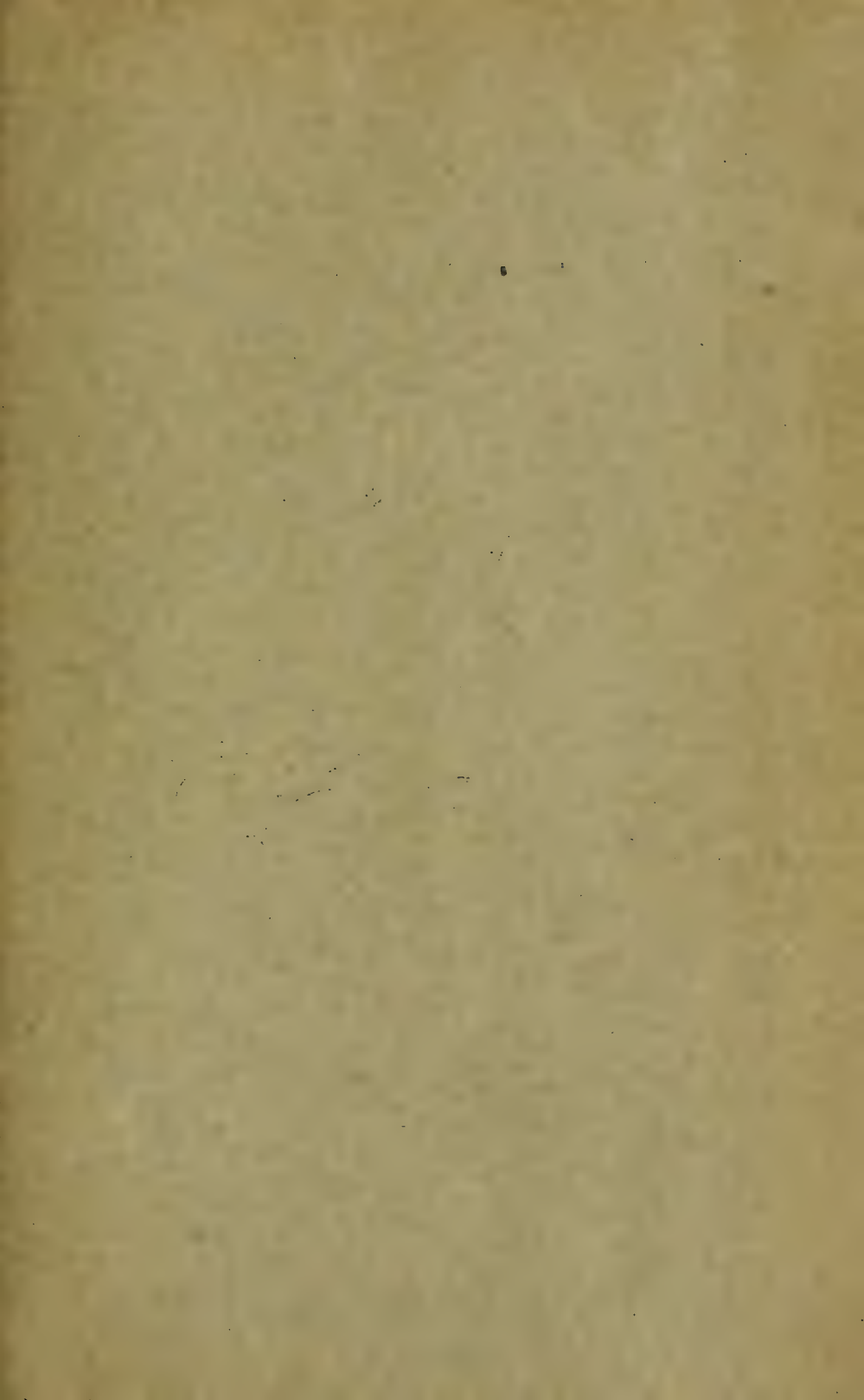
Sworn to and subscribed before me this 27th day of Sep-  
tember, 1939.

[Seal]       EMMA LEA MONTGOMERY, Notary Public.

(My commission expires February 21, 1943)







# Get 'New Car' Mileage!

*Be Wise-Use Pennzip and Pennzoil*

Want a car that will run as well next spring as it did last fall? Then, play safe during cold weather . . . use the perfect partners, Pennzip gasoline and Pennzoil motor oil.



Pennzip and Pennzoil are built to give you finer motor-ing at less cost. With them, cold cars start instantly, engines run smoother, freer and more powerfully—your mileage is increased.

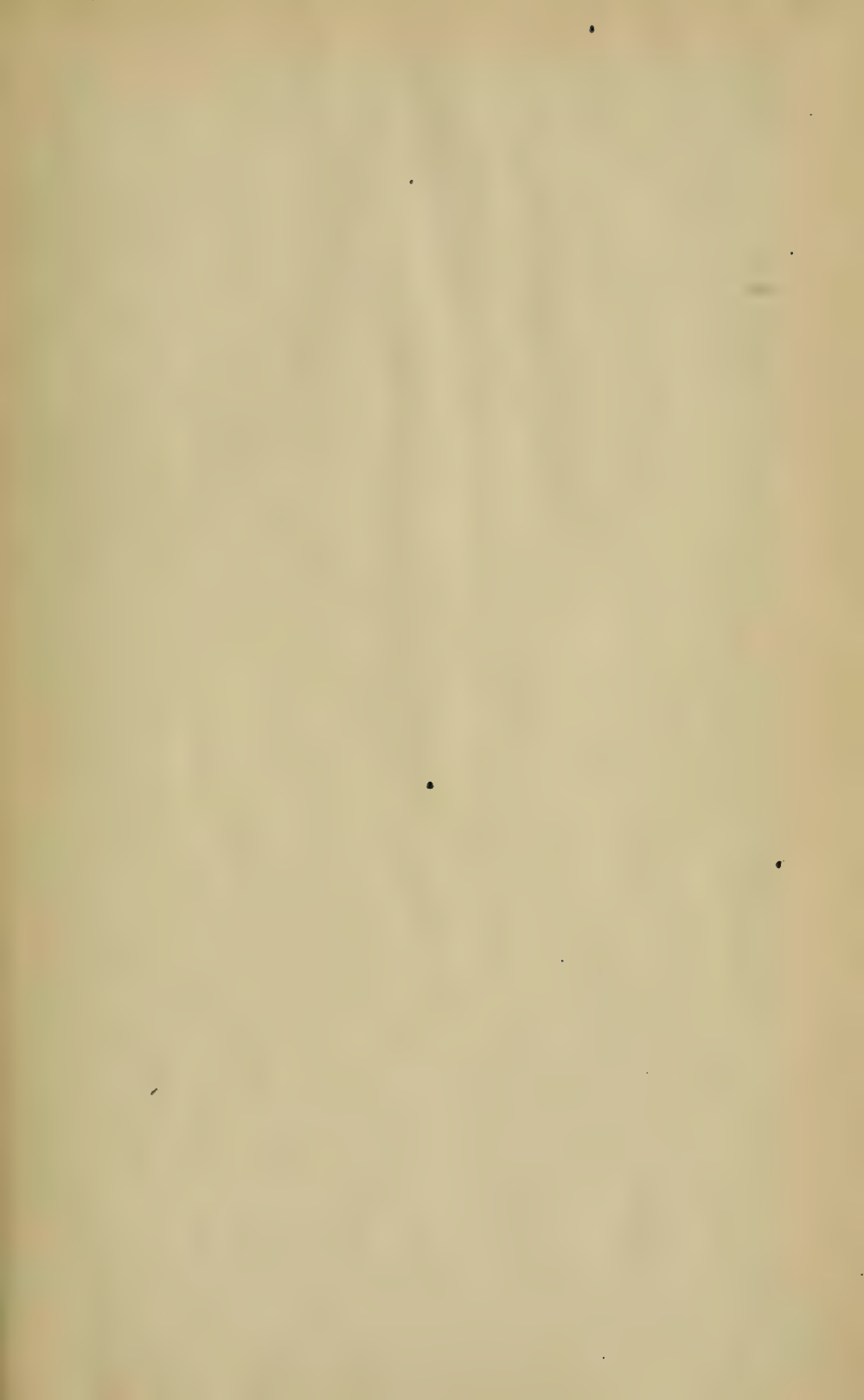
Both these perfect partners are sold by your neighbor-hood Pennzip dealer. Drive in today . . . and switch to Pennzip and Pennzoil.

## The PENNZOIL COMPANY

*Branch Office*

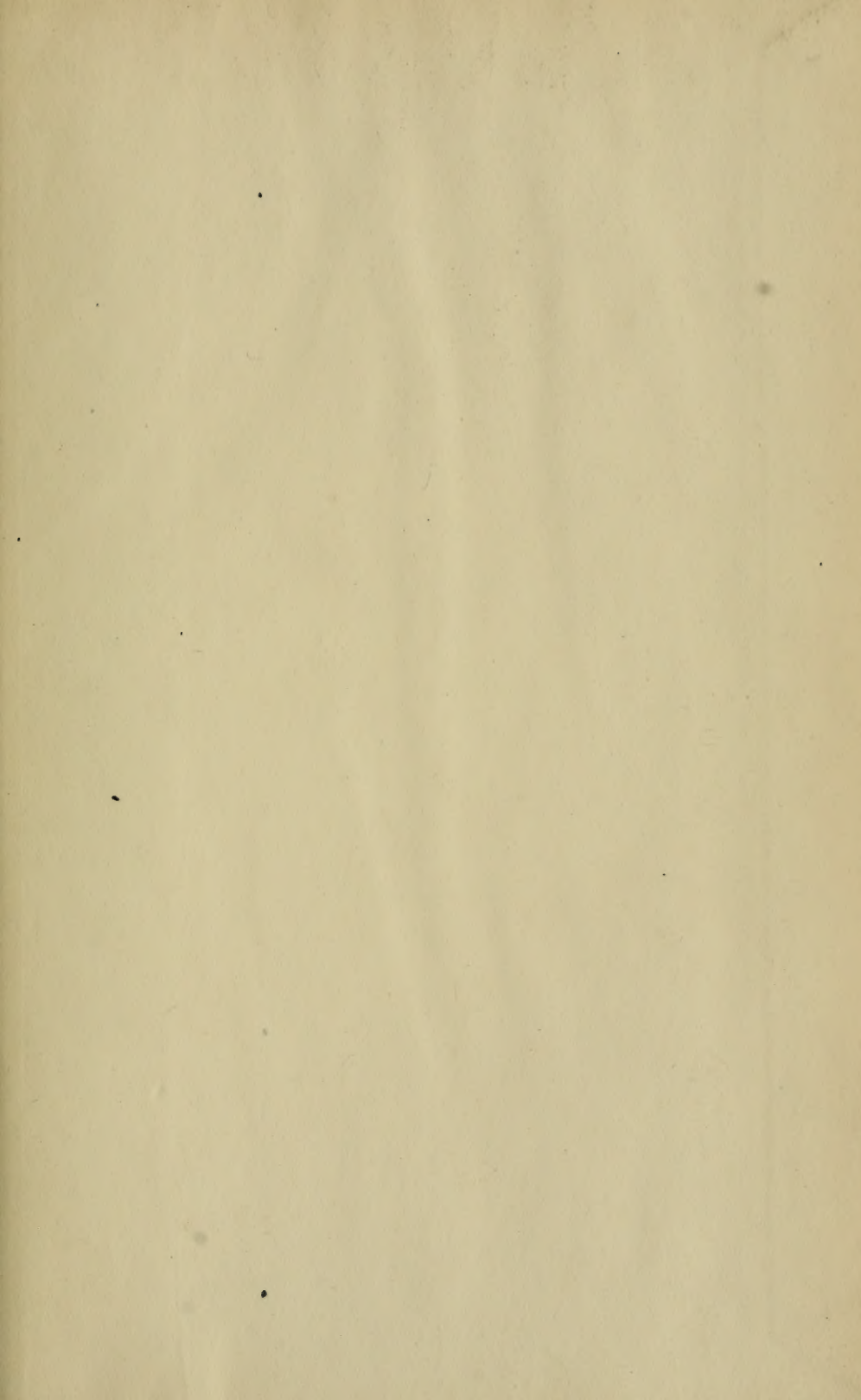
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